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NEW-WORLD SCIENCE SERIES

Edited by John W. Ritchie

PERSONAL HYGIENE AND HOME NURSING

A Practical Text for
Girls and Women for
Home and School Use

by

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The aim of the World Book Company is to publish practical texts, "books that apply the world's knowledge to the world's needs." It gives the editor and publisher unusual pleasure, therefore, to be able to issue at this time of great scarcity of physicians and nurses, a volume of such immediate help as Lippitt's *Personal Hygiene and Home Nursing*. The author is at present with the colors in France.

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TO
MY FATHER AND MY MOTHER
DR. WILLIAM FONTAINE LIPPITT
AND
MARY LOUISA LIPPITT

whose wisdom and care brought me from
delicate childhood to healthy womanhood,
and whose teachings have served as a
guide to me in the preparation of this work

INTRODUCTORY NOTE

As I look back over years spent in a medical practice confined largely to patients suffering from a moderate degree of chronic invalidism and nutritional disorders, certain facts present themselves in a striking way. First, that the cause of this depleted health is almost always the result of a lack of knowledge and consequent failure to conform to natural laws. Second, that whatever measure of success results from the treatment of such cases is due, almost entirely, to the establishment of a scheme of living suited to the individual case. The patient is entered upon a course of progressive upbuilding, being instructed as to diet, bathing, exercise, rest, and amount and character of work. With careful and explicit instruction and with guidance from week to week, the results in most cases are excellent, the patient gaining in weight and strength. Little or no medicine is required, and it is gratifying to see the interest of the average person in the plan of treatment and his enthusiasm in carrying it out.

The results secured in such cases clearly indicate that great benefits would follow general instruction of our people in the art of right physical living, and there is now, especially since the outbreak of the great war, an increasing desire for knowledge of this kind. It is wholesome and encouraging that it should be so, and it is especially gratifying that many of our girls and women are receiving instruction in how to preserve their own health and the health of those dependent on them. It is a move in the right direction, and great good will come of it.

The author of this book is unusually well qualified to write for girls and women in regard to matters of health, as I from personal acquaintance know. She is writing her own first-hand knowledge and experiences, and the book should fill a greatly felt need and be of unusual value to those desiring to know how best to live and how to keep well.

WILLIAM EARL CLARK, M.D.

WASHINGTON, D.C.

Sath'er 1.53-1920



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PERSONAL HYGIENE AND HOME NURSING

CHAPTER ONE

HEALTH GETTING AND HEALTH KEEPING

How often have you heard it said: "I wish the doctors in America were paid as they are in China, to keep their patients well and not to try to cure them after they become sick." It is true that in Europe and America medicines and medical treatments were for centuries given only to cure ailments present, and most of us are yet unwilling to pay for medical advice unless we are already ill. Yet, during recent years physicians have been devoting much time to searching out the causes of disease and to finding how to keep those already in health from becoming ill. These attempts at preventing sickness have been so amazingly successful that where all our modern knowledge is applied we are now able not only to control most communicable diseases but also to prevent many of the chronic diseases of middle and later life. Even the layman now recognizes that in the field of health, prevention is more effective than cure, and to a very marked extent we are using our physicians to keep us well rather than to cure us after we become ill.

A full history of the advances in medicine and surgery that have been made during the last half century is not only most interesting, but is as thrilling as a tale of adventure. Many of those who have investigated the origin and transmission of disease have worked without financial reward, and some have even risked their lives deliberately that others might be saved from illness and death. Among these may be mentioned Dr. James Carroll, who exposed himself to the bite of the yellow-fever mosquito and thus contracted the disease; Dr. Jesse Lazear, who died from the same disease; and Dr. Walter Reed, who risked his

life to prove the mosquito the carrier of the yellow-fever germ. By the researches and heroic work of these men and their co-workers, Havana was made healthful, the Panama Canal became possible, and the world was given a shining example of the value of preventive measures when applied to problems of health.

Necessity for teaching hygiene to the young. Gradually doctors and others who have interested themselves in the prevention of illness have come to realize that to keep people in health during their more active years and to prevent their becoming invalids in later life, it is necessary to teach right habits of living to the young and to give them a right attitude of mind toward questions of health. The things in life that we have always had, or that come to us easily, we do not value enough, and perhaps it is because nature has been so generous in giving us healthy bodies that we do not realize the possibility of injuring them. A strong, healthy girl frequently receives with impatience a suggestion that she should take care of herself; she feels that nothing can hurt her, and so she recklessly throws away by little foolish acts, sometimes thoughtless, sometimes deliberate, the health which, after it is gone, she realizes was the foundation of everything worth having in life.

One of the trials that older people have to bear is to see girls and boys injuring their health in this way, receiving advice with impatience and continuing to make the same mistakes that their fathers and mothers, perhaps, made in their youth, and for which they are paying now. In my experience I have found it true in most cases, that if a girl is taught something of her body and the care of it and of the results following its neglect, she will make an effort to live the life that she should, observing the laws of personal hygiene, not spending all her health and strength in her youth, but laying up some of it to use in her future life when the calls upon it may be heavy. Therefore in these chapters the attempt is made not only to teach how to live, but to make clear the reasons for so living.

Health needed by the woman of today. A generation or two ago, we are told, a delicate woman was considered quite interesting, and fainting gracefully was an accomplishment to be cultivated. But the woman of today cannot afford to be delicate; there is too much to interest her, and too much that she wants to be able to do and do well. A healthy body, doing its work without effort, enables one to accomplish and endure, and leaves the mind free to develop. Women are now forced by the war to enter many new positions which up to this time have been filled by men, and in these new positions they are accomplishing a great deal. You do not want to be behind in the race; and since good health means greater efficiency, either at home or in business, you should run no risk of losing your health, nor hesitate at any effort that will help you to attain health if you do not have it.

Knowledge of health getting and health keeping, though simple in itself, is so often buried in big medical books and obscured by technicalities that in many cases it is kept from those who need it. With the hope of giving to girls and women practical instruction for daily life, in terms clear to every one, this book has been written. Its purpose is to explain how a girl may attain health and happiness in the present and lay the foundation for a sane and vigorous old age; to give directions for preventing the spreading of infection from cases of communicable diseases; and to furnish instruction in caring for oneself and one's family in time of accident or sickness in the home.

CHAPTER TWO

BATHING—CARE OF THE SKIN AND HAIR

CIVILIZATION has been roughly defined as the difference between the washed and the unwashed. Frequent bathing is necessary to proper standards of living, but baths may also have an important relation to the health. The details of taking them must differ with the individual, however, for nearly every kind of bath is beneficial to some people and harmful to others. For most persons a daily bath is agreeable as well as wholesome; but for some a daily bath is too drying to the skin, and causes roughness and even fissures in the cuticle. Keeping clean is an important matter, but the ways and means of keeping clean should be such as are best suited to the individual constitution.

The skin and its functions. The skin is composed of two layers: the *epidermis*, or outer layer, and the *dermis*, or, as it is generally

called, the "true skin." The outer layer is constantly renewed by an imperceptible process of growth, the old skin being rubbed off by the clothing and in bathing. The skin contains glands which secrete perspiration, and others which secrete an oily substance that keeps the skin and the hair soft. The latter are called the *sebaceous glands*. The oil from the sebaceous glands, with perspiration and dust, becomes mixed with the old skin, and, unless removed by bathing, it forms a breeding place for germs, which cause blackheads, pimples, and various skin diseases.



FIG. 1. A section of the skin.

The skin has four functions. It forms a protective covering for the body; it helps through the secretion of perspiration to regulate the heat of the body; it is an organ of touch and for the perception of temperature and pain; and it eliminates some of the water and a small part of the waste products of the body. The daily bath keeps the pores of the skin from becoming clogged and prevents the odor of perspiration, and baths may be used to train the skin in the better regulation of the body heat.

The cold bath. Most persons find that a cold bath taken in the morning creates appetite, improves the circulation, arouses the sympathetic nervous system, and is very exhilarating. A cold tub bath should be quickly taken, — merely a dip, — or the cold bath may be taken as a shower or douche. Certain conditions should always be fulfilled: (1) the body should be warm; (2) the bath should be taken in a warm room; (3) one must be able to react, becoming thoroughly warm after the shock of the cold water. After the bath the skin should be well rubbed with a coarse towel. Sometimes slapping the body all over with the hands helps to warm it. The best time for the cold bath is immediately after getting out of bed, or after exercise which has quickened the circulation and warmed the body. For many people the best plan is to warm the body by a hot bath, and to get the stimulation by a cold shower at the end.

The cold bath should not be taken in old age, or, except in very rare cases, in infancy. It should not be taken when one is excessively tired or has not slept well, or when, on account of illness or exposure to cold, the temperature of the body is low, or if the application of cold water is a severe shock and there is extreme shrinking from it. If the bath is followed by a chill, or if, though apparently warming well after taking it, one is fatigued and chilly through the day, the cold bath is not beneficial. Sometimes a cold sponge bath in a warm room, or a cold shower after a hot bath, is an agreeable stimulus to those who cannot react after a cold tub.

The hot bath. To most persons a hot bath, taken at night after a fatiguing day, is refreshing and healthful. It draws the blood away from the muscles to the skin, taking from the muscles the feeling of soreness, and causes a general feeling of relaxation and rest. For exactly the same reasons the bath should not be taken soon after a full meal, as the blood is drawn away from the digestive organs. At least one hour should elapse between the meal and the bath. With some persons the effect of the hot bath is stimulating rather than soothing, and if taken just before retiring it will keep them awake all night. When this is the case, the hot bath should be taken earlier in the evening. Sometimes a glass of milk or some other light refreshment after the bath will prevent wakefulness; at such times hot milk, hot soup, or hot cocoa are better than cold food.

A hot bath is frequently good for a cold, but must be taken in the right way if it is to be of use. All preparations for bed should be made before taking the bath, — the bed covers should be turned down, the windows opened, extra covers placed at hand, and everything else prepared. To wander around the room, brushing your hair, looking for a hot-water bag and filling it, and doing other odd jobs, after relaxing in the bath, means that the bath will not only do no good, but probably make the cold worse.

The tepid bath. If one takes a tepid bath daily, it is not well to stay in the water for more than five minutes. Tepid water does not stimulate the body, and staying in the bath too long will cause a relaxed condition of the muscles and a certain feeling of lassitude.

Sometimes a physician orders a tepid bath to be taken at night, to cause relaxation and counteract the condition of insomnia. In this case one may remain in the water for ten or fifteen minutes. Keeping the water in motion, by letting it run in from the faucet and out at the waste while one is in the tub, is very soothing and conducive to sleep.

Special baths. Salt baths, perfumed baths, and other luxuries of bathing are by no means unattainable in the average home. Generally speaking, whatever makes a bath pleasant and agrees with the conditions of general health is worth a little extra trouble. Sometimes the water is hard, and must be softened by using the proper kind of soap, or the skin will become rough and chapped. The flesh brush and the nail brush are necessary to perfect cleanliness.

Special attention should be paid to the feet, for negligence here will result in all sorts of pain and trouble. Hot foot baths do much to relieve fatigue. If hot water is not available, and the feet are hot and dusty, they should be sponged off with cold water. If the feet are swelled and the muscles sore and painful, the most efficacious bath is that of alternating hot and cold water. When taking this bath, the feet are dipped, first in cold water, then in hot, changing from one to the other fifteen or twenty times. There are two ways of taking this type of foot bath. In one method two bowls are used, one filled with hot water, one with cold. The other method is to fill one bowl with hot water and set it in a large bathtub; then, sitting on the edge of the tub, turn on the cold-water faucet and hold the foot first under the running cold water and then in the hot water, changing quickly from one to the other and ending with the cold water.

Care of the complexion. The skin of the face needs special care to keep it in a healthy condition. Being uncovered, it is constantly exposed to the sun, wind, and cold. At night, before retiring, the face must be thoroughly washed to remove the dust and dirt of the day. Bathing first in hot water, then in cold, is refreshing and stimulating to the skin. Blackheads frequently form around the nose if the skin is not kept clear by bathing. After the bath rub the face with a good cold cream, rubbing in small circles and working upward, and removing the surplus cream with a soft towel or cloth. A quick sponge with cold water into which a little good toilet water has been poured will be refreshing

and stimulating after the face has been bathed in hot water. Before going out into the sun or wind, rub in a little cold cream, removing the surplus cream with soft linen, and powder lightly. When you are working over a stove, a little cold cream is good to prevent burning.

It is not wise to use creams, soaps, and face lotions which happen to be well advertised for the moment, but of which you really know nothing. Choose those made by a good firm with a reputation to sustain, or ask your doctor to recommend a brand sure to be harmless. If you are troubled with acne or pimples, it is best to go to a regular physician who is a skin specialist and not a "beauty doctor." Many complexions have been ruined by home treatments and patent medicines.

Cosmetics are not always injurious to the skin. A girl who uses them, however, not only shows bad taste but invites much disagreeable comment. Few, if any, of those who see the made-up complexion are deceived, and except on the stage a really artistic make-up is seldom seen. The artificial lights of the theater demand paint and powder, but even here the best actresses use the make-up box as little as possible, and they get rid of the paint at the earliest opportunity because they know what it does to the skin. If the girl who paints and covers her face with powders could read the thoughts of those who meet her, she would seldom be able to resume the practice with any comfort. There are few things more beautiful than the healthy glow of a young girl's skin, and cosmetics, no matter how skillfully applied, can never produce the same effect. A pale or sallow skin in a young person is most often caused by some condition of the body which has been brought about by neglect of the laws of hygiene; and it is by improving the condition of her health that a girl will make her complexion what it ought to be.

The care of the complexion must often begin with attention to the general health, for no part of the skin is more directly affected by indigestion, lack of exercise, neglect of bathing, or ex-

cessive fatigue than is the skin of the face. The bowels should be kept regular, indigestible food avoided, and the pores of the skin of the whole body kept clear by bathing. By drinking plenty of water through the day and thus "flushing" the canals of the body, the accumulation of waste is avoided. If these matters receive due attention, with good exercise in the open air, and deep breathing practiced daily, the complexion should be clear and glowing if not brilliant. If sallowness or other defects persist after all this, there is probably ill health from some other cause, and the advice of a doctor should be asked.

✧ **Care of the hands.** The hands should be washed often, and especially before eating. The nails should be scrubbed with a brush and cleaned with an orange stick. The fingers should not be put into the mouth unless they have just been washed, as they have constantly touched things which may have been touched and infected by others. Rubbing cold cream into the hands helps to keep them soft and free from cracks. Some soaps dry the skin too much. If you are troubled with dry or chapped skin, select your soap with special care.

✧ **Care of the hair.** The hair should always be taken down and brushed at night. If it is left rolled up on the head, the heating and strain on the roots are likely to cause it to fall out, and sometimes a bald spot may appear at the point where the hair is pinned up. Brushing removes the dust and dirt which has lodged in it during the day, stimulates the circulation in the scalp, and softens the hair by spreading over it oil from the sebaceous glands. The hair should be washed at least once in two months, and oftener if it is not brushed daily. If an abnormal amount of hair falls out, steps should be taken to check the loss. Massage is the best treatment for the scalp, and a little tonic may be rubbed into the scalp at least once a week. Never use a comb or brush which has been used by others. Dandruff, a common germ disease of the scalp, is easily spread through brushes and combs.

CHAPTER THREE

CARE OF THE MOUTH AND TEETH

IN spite of the fact that the medical profession has realized for some time that an unhealthy condition of the mouth and teeth is a cause of both acute and chronic diseases, it has been a difficult matter to make the people understand the necessity of giving proper care to their mouths. Of course most persons are taught that the teeth must be cleaned night and morning, but they think of this as "something that all ladies and gentlemen do" rather than as a most important hygienic practice.

Because we have learned that when the teeth decay, centers of infection are established that may remain for years about the roots of the teeth and in the bones of the face, and that these infections lead to serious diseases of the heart, kidneys, and other organs, mouth hygiene has now come to occupy an important place in any program of health work.

Importance of preventing tooth troubles. In the oral hygiene movement which has been so prominent in recent years, the entire emphasis is placed on prevention. While the teeth are yet sound is when the work should be done on them. After decay has set in, the damage can be remedied only in part; and when the germs have made their way into the root canals and the bones of the jaw, the highest dental skill is required to eradicate them. Many of the teeth that have been filled or crowned after removing the pulp and treating the cavity still have areas of infected bone about their roots, and not a few medical men have felt that on the whole as much harm as good has been done by the crowns and bridges that dentists have placed in the mouths of their patients during the past years. On this account there is great insistence that the teeth be properly cared for from earliest childhood, so that they will come into the mouth in their proper places and remain firm and sound.

The care of a baby's mouth. A baby's mouth should be washed after each feeding, not merely night and morning. This must be

carefully done, as the mucous membrane of an infant's mouth is very tender. The nurse or mother should wrap a piece of absorbent cotton around the first finger, and then, dipping the cotton in either sterile water or a saturated solution of boric acid, wash thoroughly but gently all parts of the mouth. Especial care should be taken to pass the cotton over and under the tongue and between the gums and cheeks, since coagulated milk is most likely to lodge in these places. The hands should be thoroughly washed and the nails trimmed and cleaned before beginning the work, so that there will be no possibility of carrying germs into the mouth of the infant or of lacerating the gums with the nails.

All feeding utensils and apparatus used in connection with an infant's food should be boiled, and if the mouth becomes sore the attention of the physician should be called to it at once, for the child may be prevented from nursing as it should and its health be interfered with in this way. Thrush and stomatitis are two diseases which may follow carelessness in the care of an infant's mouth.

The care of the first or temporary teeth. As soon as the first teeth appear, they should be looked after as carefully as the teeth of an adult. The mouth and teeth should be washed at least twice a day, and, after the child begins to eat, four times a day. A small brush with soft bristles should be used. After all the temporary teeth are in place, the child should be taken to a dentist from time to time, in order that the teeth may be watched by him, cleaned, and filled when necessary. It is very important that the temporary teeth be preserved, for several reasons: (1) The pain associated with decayed and aching teeth causes nervousness and loss of sleep. (2) If the teeth are not filled, abscesses in the gums may develop which may materially affect the child's health. (3) Premature loss of the first teeth frequently interferes with normal growth of the jaws and causes malocclusion or irregularity of the permanent teeth. (4) As the permanent teeth push down in the jaws, the roots of the temporary teeth are absorbed before

them. If a temporary tooth is dead the roots are not absorbed, and unless the tooth is extracted the permanent tooth will come through inside or outside of it.

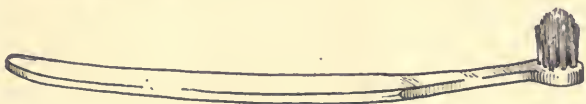


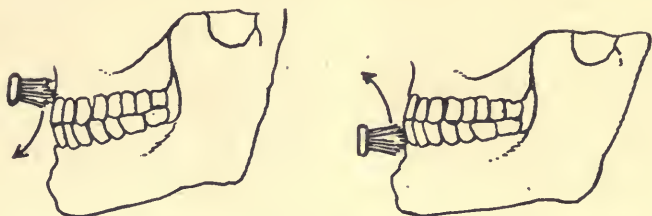
FIG. 2. A small brush with which all the surfaces of the teeth may be cleaned.

Other conditions which cause irregularity of the teeth are mouth breathing due to adenoids and enlarged tonsils or to malformation of the bones within the nose; sucking of the thumbs or fingers; or lack of proper use of the teeth, owing to open cavities in them or to loss of some of them.

The permanent teeth. At about the sixth year the first permanent molar appears, and then the other permanent teeth gradually take their places, until at the age of twelve all but the wisdom teeth are in the mouth. The wisdom teeth may come as early as at the age of sixteen or may not appear until well toward middle life, and sometimes some of them do not appear at all.

The largest and most important of the permanent teeth are the six-year molars. During the time when the temporary teeth are being lost they do most of the mastication, and they are the guides by which the other permanent teeth are brought into their proper places. They have deep pits in their surfaces, which hold food and are apt to lead to decay, and therefore they need to be carefully watched. It is especially important that these teeth be preserved and kept in their right places, for if they are lost or out of place the rest of the teeth are likely to be irregular. One reason for giving the baby molars special care is because if they are lost the six-year molars are likely to crowd forward and not leave enough room for the other permanent teeth that will come into the mouth in front of them. As a consequence, some of these will come through in front of or behind the dental arch, and the line of teeth will be irregular. These irregularities should be pre-

vented by preserving the teeth from decay, but if they appear they should be attended to early. It is better for the teeth to



FIGS. 3-4. In brushing the teeth the movement of the brush should be away from and not toward the gums.

be forced to grow into their right positions than to be straightened later.

Cleaning the teeth. The teeth should always be cleaned at least twice daily, oftener when possible, and after each meal should be rinsed with tepid water or salt and water to remove all particles of food which may have lodged between them. It is well to brush the teeth and rinse the mouth with tepid salt water in the morning before breakfast. The gums should be brushed as well as the teeth, for they need a certain amount of friction to keep them healthy. A brush with medium stiff bristles is best, and if decay is to be prevented all the surfaces of the teeth must be reached.

The brush and its care. Most of the brushes used for cleaning the teeth are too large, making it difficult to cleanse properly the back teeth, where the space is narrow between the jaws and the cheeks. An adult should use a brush almost as small as the brush which is usually sold for a child, and any one who has once become accustomed to a brush of that size and has experienced the feeling of cleanness that the mouth has after its use, will never again be satisfied to use a larger one. There is a small brush with a slender curved handle and a tuft of bristles only as big as the end of the finger, which is made to use in cleaning the inside of the teeth and around the wisdom teeth and molars. This brush

is very satisfactory, and with it and a larger brush one may clean all the surfaces of the teeth most thoroughly.

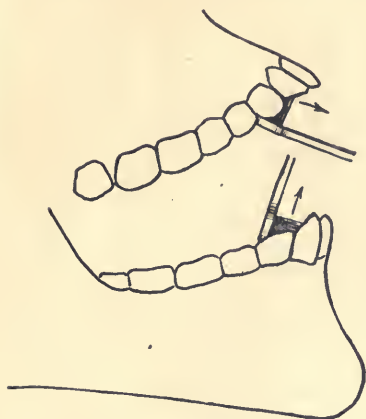


FIG. 5. Correct position of the brush in cleaning the inside of the front teeth.

It is best to have two sets of brushes, one for the morning and one for the evening. This allows the brushes to dry thoroughly and restores their efficiency. The brush should be thoroughly washed out after use — if possible, rinsed under a forcible stream to cleanse it from all powder, paste, or particles of food which may remain in it. Hang the brush up away from dust and other brushes.

Correct method of using the brush. In cleaning the teeth, place the brush upon the gum and then, with the upper and lower teeth held slightly apart, bring the brush with a rotary motion down to the end of the teeth. Clean first the upper teeth and then the lower, each set separately. The brush should never be brought from the upper teeth down over the lower or from the lower up over the upper, as by this method particles of food are forced under the edges of the gum. The rotary movement causes the hairs of the brush to penetrate between the teeth and thoroughly cleans in between them. The inside of the teeth is cleaned with the small brush, turning it with the same rotary movement. Brush the masticating surfaces of the teeth with an in-and-out, side-to-side movement. This cleans the pits and grooves.

Tooth pastes and powders. Mouth washes, powders, and pastes are of little good as disinfectants, but they help to clean the teeth and mouth and leave a pleasant taste. No gritty powders



Walter E. Fancher, D.D.S.

FIG. 6. Radiograph of aching molar. The light area around the roots of the tooth in the center of the cut is due to bone destruction and the presence of pus. At the right is shown a tooth with a well-made porcelain crown, but the root canal has not been perfectly filled.



Walter E. Fancher, D.D.S.

FIG. 7. The patient experienced no pain from any of the teeth, but the radiograph shows that the root canal of the second tooth from the left is only partially filled and the light area at the root indicates infection and the destruction of bone.

should be used, as they may injure the enamel and make the teeth more liable to decay.

Use of toothpicks and silk. A toothpick or floss silk may be used between the teeth to remove particles of food, and are beneficial unless used with sufficient force to injure the gums. Silk should not be used if the teeth are so close together that it is impossible to get the silk between them without using force, for if this is the case it is impossible to prevent the silk from striking and lacerating the gums, thus leaving them in a condition in which they may become infected. A quill toothpick is better than one made of either wood or metal, as it is flexible and not so likely to injure the gums. If there are spaces between teeth where particles of food are forced and retained, the trouble can be remedied by having the normal contact of the teeth restored by a dentist.

Preventing the formation of cavities in the teeth. The most common disease of the teeth is dental decay. This starts, not from within the tooth but from without, and is caused by bacteria growing in the material that adheres to the teeth. The parts



Walter E. Fancher, D.D.S.

FIG. 8. The second tooth from the left shows a perfect filling of the root canal. The root was filled and the radiograph then taken to check up the work before inserting a permanent filling in the tooth.

continue the process of decay. Anything which injures the hard surface of the tooth will enable the germs to enter. Sometimes an illness during the time when the permanent teeth are developing will interfere with the perfect formation of the enamel and leave weak places for the development of decay. Keeping the mouth and teeth absolutely clean by frequent brushing and rinsing is the surest way to prevent decay. In addition to this care, a dentist should be visited four times a year and any material that adheres to the teeth along the margins of the gums should be removed.

Pyorrhea alveolaris. Pyorrhea, or "Rigg's disease," as it is often called, is a disease of the membrane covering the roots of the teeth, the gums, and the bony sockets. The disease, according to several authorities, is caused by an infection of the soft tissue which has followed a slight injury to the gum, or by a loss of resistance on the part of the gum from lack of use or some systemic condition. The loss of one or more teeth, which interferes with the normal function of the remaining teeth, is a predisposing cause. The presence of the germs is of course a necessary factor, for the disease cannot develop without them. Injuries to the gums may

of the teeth most likely to decay are the places that are somewhat protected from friction and where food is left to ferment and form an acid which destroys the enamel, or hard outer coating of the tooth. These points are: (1) between the teeth, (2) in the rough surfaces of the molars, and (3) along the edges of the gums.

After the enamel of the tooth is once broken, it is an easy matter for the bacteria to penetrate into the softer part of the tooth and



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FIG. 9. Radiograph of four lower anterior teeth, showing bone destruction around the roots due to pyorrhea. The light areas about the roots of the teeth are the infected parts.



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FIG. 10. Radiograph showing two pyorrhea pockets about the teeth. The first molar, which has a gold crown, is apparently alive and healthy. The two large light areas are the infected parts.

be caused by the improper use of toothpicks, by improperly fitted bridges and crowns, by overhanging fillings, by food which has been forced between the teeth, by injuries caused by careless use of dental instruments, rubber dam, or clamps.

Dr. Rigg's theory was that the disease is caused by the accumulation of tartar about the teeth, which, extending down under the margin of the gum, starts an inflammation in the gum which causes it to shrink, and as the tartar extends farther and farther down on the tooth it gradually forces the gum out of place. In some cases pus is found about the roots of a tooth, but sometimes the destruction of the tissue around will take place and the tooth be loosened and finally drop out without the appearance of pus.

Symptoms of the disease. The first symptom recognized is an inflammation. A red, spongy appearance of the gums is noted, especially between the teeth. The gums bleed easily under pressure. Unless the disease has progressed considerably it is not easily recognized, and its presence can be determined only by a thorough examination given by a good dentist.

Treatment. Upon the first appearance of the symptoms, the mouth should be put under the care of a competent dentist.

Excessive stress on any individual teeth should be noted and the stress equally distributed. All tartar should be removed and the teeth thoroughly cleaned and polished. All cavities should be filled, faulty fillings removed, septic teeth which cannot be sterilized should be removed, and the mouth and teeth put into the best condition possible. At least four times a year the teeth should be inspected and all necessary work done. When the treatment of pyorrhea has been properly conducted, and prophylactic treatments are given at frequent intervals, the recurrence of the disease is rare, in case the home care of the teeth is faithfully adhered to.

Results of pyorrhea. Until recently the local effect of pyorrhea upon the mouth was the only one considered, but now the possibility of the injurious effects of this disease upon the whole system is thoroughly recognized by the medical profession.

Pus, septic discharges, toxins, and sometimes the germs themselves are carried all through the body by the blood stream and cause such conditions as appendicitis, nephritis (inflammation of the kidneys), rheumatic fever, inflammation of the intestine, arthritis deformans, hardening of the arteries, anemia, tonsillitis, gastric and intestinal ulcers, carbuncles, abscesses in glands and other tissues, and certain types of heart disease. Because of the possibility of the development of some of the diseases listed above, one can see the absolute necessity of giving proper care to the mouth both in the daily cleansing of the teeth and in frequent visits to the dentist, and should realize how foolish it is to allow the teeth to become decayed and infected because of the annoyance or possible pain which one may suffer while undergoing a treatment by the dentist.

Alveolar abscess. Another disease which is a cause of infection throughout the body is abscesses at the roots of the teeth. A dental abscess (gum boil) usually follows the death of the pulp, the germs working up from the dead tissue into the bones of the jaw. Abscesses may be acute, when there is excessive pain and

inflammation, or they may be chronic and caused by bacteria of a low form of virulence, with little inflammation and no pain. Sometimes a chronic case will follow an acute attack and will spread in the bones of the jaws and face, injuring the tissue and poisoning the whole system, while there are absolutely no symptoms in the tooth itself to give warning of the mischief that is being done. Abscesses of this character can be detected only by the use of the 'X-ray and are found only when some condition of the body arises which starts a search for the source of infection.

It is most important that any cavities that form in the teeth be filled while they are yet small; for after the pulp dies it requires very skillful dental work to save the tooth and at the same time make sure that a center of infection at the root of the tooth and in the bones of the jaw that will be most dangerous to the general health is not being established. It is because of this fact that prevention has come to occupy so prominent a place in the hygiene of the mouth and teeth.

CHAPTER FOUR

CLOTHING

THE choosing and making of clothing is a matter in which women seem to show less judgment than on any other subject relating to health. The real object of clothing too often is subordinated to unnecessary and sometimes inartistic ornament. The best-dressed woman is often not the one who is dressed in the extreme of the latest fashion, but the one whose clothes are suitable to the time and occasion, and of a style suitable to herself.

Clothing and the body temperature. Properly chosen clothing should keep the body at as even a temperature as possible. It should be adapted to the weather, protecting against cold in winter and heat in summer, and guarding the skin from sudden changes in atmospheric conditions. The present-day fashion of wearing furs in hot weather and low shoes, with thin stockings, in the winter is foolish, and those who follow it show little wisdom. Clothing should also be suited to the occasion for which it is worn. A light wrap is best for a rapid walk, as a heavy wrap is tiring and apt to overheat the body; but when dressed for walking one should not stand around out of doors and become chilled.

Wearing flannels. It is now not considered best, except for old people and little children, to wear flannel next the skin. In other days, when street cars were not warmed at all, and houses, churches, and office buildings were warmed by stoves, flannels and heavy woolen stockings were needed. Today, when most houses are too warm, and all conveyances in which one travels are heated, too heavy clothing is not only unnecessary, but, because of the perspiration caused, may be actually harmful. Flannel damp with perspiration dries but slowly, and the body may become chilled if exposed to cold or draft. When flannel is used for little children, care should be taken that it is not too rough for the skin. Some persons cannot wear flannel next the skin without uncomfortable itching. A rash like prickly heat may even result from the rubbing of rough cloth on the skin, and in any case

the nervous irritation of the itching is bad for the child. A soft linen or muslin garment may be used between the skin and the flannel. The ideal material for underwear is a mesh made of either linen or cotton. Underwear made of this light, porous material does not often produce a profuse perspiration; and even if this should happen the porous material dries quickly, so that one is seldom chilled when going from a warm atmosphere to a cold one.

The most sensible costume for our modern conditions is one which can be altered to suit surroundings. With a warm cloak to wear out of doors in cold weather, a light silk or muslin blouse for the steam-heated or furnace-heated room, and some sort of light wrap or over-blouse to slip on if needed, one is protected against the cold without heavy flannel underwear, and there is no danger of getting into a profuse perspiration.

Tight clothing injurious. Clothing should not be worn tight enough to interfere with the circulation or with the normal function (action) of the organs. Corsets worn too tight, especially around the waist, interfere with the breathing and make an injurious pressure upon the abdominal organs. High, tight collars prevent the proper circulation of blood in the vessels of the neck and often cause headaches. Tight shoes, besides deforming and injuring the feet, make them cold because of the interference with the circulation; and tight gloves make the hands cold by cutting off the warm blood from them.

In hot summer weather clothing should be thin, so that as much air as possible can get to the skin to help in the evaporation of the perspiration. Waists made with an open neck and sleeves reaching only to the elbow help to keep the body cool. Low shoes are cooler than high ones, and white canvas shoes are more comfortable and less tiring than leather shoes. Black absorbs radiant heat and should not be worn when one is exposed to the hot sun; thin, white clothing not only looks cooler but is cooler. Tight gauze underwear is warmer than thin, loose underwear. The

head too should be protected from the direct rays of the sun by a big hat or parasol.

Choosing the right corset. A few years ago the corset was thought to be the cause of most of the ailments from which women suffered. Those were the days of that type of corset which compressed the waist, caused malformation of the lower ribs, and interfered with the action of the stomach and liver. Now physicians not only approve but recommend the properly made corset. The use of the corset for little children with weak abdominal muscles and stooped shoulders is advised by one prominent physician. The healthful corset fits close around the lower part of the abdomen and is loose above, following the natural lines of the figure. It supports the abdominal organs and makes no pressure upon the stomach or in the region of the diaphragm.

A really good corset is an excellent investment, since it not only looks and wears well, but is fitted carefully to the figure. Corsets are now designed for dancing, riding, and various athletic exercises, and are so made as to interfere in no way with anything that a woman may be called upon to do.

Care of the feet. The care of the feet is one of the most important and least understood of all the branches of hygiene. Low shoes, even slippers and pumps, are worn by women and girls in cold, wet weather, rubbers are neglected, and the feet are allowed to remain wet and cold. From such practices as these, ill health results. Chronic headache may be caused by not protecting the feet from cold and wet, especially at the time of the monthly period. Many women neglect changing wet shoes and stockings for dry, though it takes at the most only five or ten minutes to do this. If it is impossible to change the shoes, as when going into the school-room or office, one can always wear rubbers with gaiters or high shoes to keep the ankles dry. An extra pair of rubbers kept in reserve at the office will save wet feet in case of a sudden storm. Damp shoes — which, the wearer may insist, are not really wet — are practically as dangerous as wet ones.



Army Medical Museum

FIG. 11. Slippers with French heels. They prop the arch of the foot up on end and afford a very insecure support for the body.



Army Medical Museum

FIG. 12. So-called "common sense" woman's shoe. The pointed toes cause discomfort and disinclination to walk.



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FIG. 13. X-ray of woman's foot in slipper with French heel. Note the distortion of the bones of the foot. Such shoes cause backache, headache, and nervousness.



Army Medical Museum

FIG. 14. X-ray of woman's foot in ordinary shoe with pointed toe. The great toe is turned inward, and the joint at the base of the great toe is enlarged.



Army Medical Museum

FIG. 15. One type of shoe recommended for women by the American Posture League. The inner edge is straight, and there is adequate room for the toes.



Army Medical Museum

FIG. 16. X-ray of foot in United States Army shoe. This shoe gives ample room for the toes, and the bones of the foot are in normal position.

Rubbers should not be worn unless the streets are wet, for they make the feet perspire and are very tiring; but when it is snowing or raining a leather sole, even a thick one, will absorb water and become damp. A foot bath and a pair of clean stockings and light house shoes are very restful after a hard day.

How to know good shoes. The injury that is done to the feet by the type of shoes usually worn by women is so well known to them all that it is not necessary to enter into the discussion here; but, as so many women who wish to wear the proper shoes understand so little about them and find them so difficult to buy, a description of a shoe along the proper lines may be given.

(1) A shoe of the right shape and size should fit closely at the heel and about the arch, but *it should be long enough and broad enough* for the foot, giving ample room for the toes. The arrangement of bones and muscles in the foot is such as to make the foot both strong and flexible. This arrangement makes the foot com-

pressible, and the foot can be forced into a shoe much too small for it. A corn or even a red spot on the foot is an indication of an

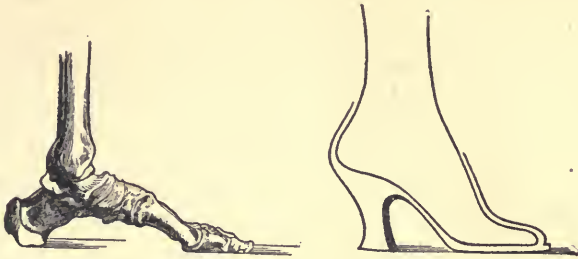


FIG. 17. The arch of the foot, and how a high heel props it up on end.

ill-fitting shoe. A woman will suffer in her feet pain and discomfort which, located in any other part of her body, would drive her quickly to a physician for relief. We have all seen many women wearing shoes which bound and injured their feet.

(2) *A shoe should have a straight last*; that is, when the heels of the shoes are placed together, the inner borders of the soles should touch each other at shank and toe.

(3) *The heel should be of proper height* to suit the wearer. A mistake that is frequently made is getting shoes with the heels too low, especially when one has been accustomed to wearing a shoe with a high heel. The muscles of the leg and the foot that have grown accustomed to the high heel are strained by too sudden a change to a very low heel. This is one reason why so many people will say that they cannot wear a "common sense" shoe, because of the fatigue, even the pain, which has followed the attempt. The heel should be properly placed, broad enough at the base to support the weight of the body, without turning, and high enough not to strain the muscles of the leg. A low heel is best for some feet, and should be used for mountain climbing.

It is much easier to buy really common-sense shoes today than it was five or six years ago. The common-sense shoes of that day were broad, thick-soled, low-heeled, too heavy for any woman to

wear, unnecessarily ugly ; indeed, a type of shoe that no one except a farm laborer would need. They strained the muscles, blistered the feet, and were anything but "common sense." To-day the demand for sensible shoes for women is becoming universal, and it is much easier to buy light-weight, well-made, good shoes.

CHAPTER FIVE

FATIGUE AND HOW TO PREVENT IT

FATIGUE is physically, intellectually, and morally dangerous; and if we shall realize this, and really make up our minds to prevent ourselves from becoming overfatigued and to do the things that will rest us, our powers of accomplishment will be increased. We often force ourselves to go on when we are not doing good work and not securing half the results that we might, simply because we have not the good judgment to stop when we should. A few minutes of rest taken in the midst of work may mean efficiency for the remainder of the day. There are times in every one's life when it is necessary to draw on the reserve capital of nervous strength which nature provides, but it does not follow that this ought to be an everyday procedure. To economize on rest, sleep, and fresh air is to be penny wise and pound foolish. In modern studies of efficiency it has been found that more work is often accomplished by shortening the hours of labor. A committee appointed to study the health of British munition workers found that the hourly output of 100 women who were making fuses increased 23 per cent when the weekly hours of labor were shortened from 68.2 to 59.7, and the hourly output of 27 men at heavy work increased 24 per cent when their hours were reduced from 61.5 to 56.2 each week.

What is the explanation of this? In all that we do either consciously or unconsciously the nervous system is the controlling power; it not only directs all the movements of the muscles, but it also regulates the heat and controls the secretions of the body. The cells of the nervous system are built up during rest and sleep, and it is necessary that the body should be rested and a sufficient amount of sleep taken to enable the nerve cells to recuperate from the strain which is constantly put upon them. The effects of fatigue and rest are shown in a familiar experiment which most students of physiology are taught to make.

A muscle from the leg of a frog is attached by one end to the



FIG. 18. A tracing made by the contractions of a muscle from a frog's leg. As the muscle becomes fatigued, its contractions become more and more feeble.

stationary part of the little instrument used in making the experiment. The other end of the muscle is fastened to a movable, sharp-pointed arm suspended over a drum covered with smoked paper. Electricity is then applied to the muscle, and as it contracts from the stimulus, the pointed arm of the instrument moves over the smoked paper, making wavelike lines, the height of each line being determined by the strength of the contraction of the muscle. As the stimulation continues and the muscle becomes exhausted, the contractions become more and more feeble and the waves lower and lower, until finally the instrument moves over the paper in a straight line. If the muscle is allowed to rest and again stimulated, the contractions will be as strong as they were before it became fatigued.

Symptoms of fatigue. When fatigue at the end of the day is too great to be repaired by a night's sleep, and we wake up tired, something is wrong. Danger signals which it is well to note are: loss of appetite, insomnia, increase of fatigue disproportionate to output of work, mental depression, lack of interest in the work, lack of initiative, loss of the sense of proportion, and a tendency to worry. Even in pleasures it is possible to overwork and fatigue the body. To spend one's leisure rushing from one recreation to another, without taking time for adequate sleep and rest, is to hasten the time when amusements will no longer have power to amuse. On the other hand, it is a mistake to feel that one must always "save strength" for the day's work, for many times an

evening at the theater wakes you up, lifts you out of the rut, and makes life seem better worth living.

Prevention of fatigue. Attention to the following points may prove helpful in preventing and in recovering from fatigue:

(1) *Forgetting work.* Learn to relax, put your work away from you, do not worry. Most people who work seem never able to get away from it. When they meet they talk constantly of it, they take no interest in anything else, and so they are never rested from it. At the theater, and on trains or boats, how many times we can learn exactly what occupations the people who are around us follow without becoming acquainted with them. Teachers will talk to each other about their work, and business men about their affairs. The minds of such people must become narrow and fatigued.

(2) *Suitable exercise.* Combine *reasonable* physical exercise with mental work. If very much fatigued from a day's work, do not overexercise. For instance, a teacher who has been standing all day is not benefited by taking a long walk. She should get fresh air by taking a ride in an open car, sleeping out of doors, or by managing in some way to spend time in the open air without fatigue.

(3) *Eating regularly.* One of the great mistakes that women sometimes make is that of not eating regularly and properly. The body requires food, — good food and at regular intervals. When shopping or when engaged in any other matter, however absorbing it may be, do not omit a regular meal, but take it at the hour when you are accustomed to taking it.

It is not wise to eat a heavy meal when you are overfatigued; but this does not mean going entirely without food, with the idea that your body will become rested and then you can eat. It is much better, if you have been several hours without food, to take something simple like a glass of milk or buttermilk, — something that is easily digested, — and then later to eat the meal. One woman I knew was told not to eat when she was fatigued. She

frequently went from her breakfast of one day to the breakfast of the next day, with the idea that she was carrying out the doctor's orders. She never found herself sufficiently rested to eat except in the morning after the night's sleep. Needless to say, she was thin, sick, and fatigued all the time.

One of the important medical discoveries of recent years is that many persons, both children and adults, are thin and languid and living on a generally low physical level because lack of appetite causes them to take insufficient food. The body requires a certain amount of food to give it vigor and strength, and when meals are missed a sufficient supply of food for the body's needs is often not taken.

Interest in work. Teach yourself to like your work. Put your heart into it, even if it is not the work which you would have selected to do. It is remarkable how much interest one can take in what she believes is uncongenial work, if she makes up her mind to like it and puts her best efforts into it. Learn to work cheerfully; few things are more fatiguing than nagging and fussing, or losing the temper. Modern psychology teaches that the mind does not tire by working as the muscles do, but that mental tasks become distasteful to us because we lose interest in them. "We become tired *of* work, not *by* work." Of course, this statement does not take account of the cramping of the body from staying a long time in one position, of the eyes becoming tired, or of other physical exhaustion.

Rest and sleep. If you wish to keep your nerves in good working order, you must have plenty of sleep; for it is during sleep that the cells of the nervous system are built up for work. The amount of sleep necessary varies with the individual. There are a very few who seem to find four or five hours of sleep enough; most persons need at least eight hours' sleep to keep them in the best of health. A safe general rule to follow is to make sure that you are getting all the sleep that you need. Waking up sleepy and tired in the morning is a pretty sure indication of a lack of

sleep or of a diseased condition of the body that is causing unnatural drowsiness and needs medical attention. A wise division of the day for most persons is eight hours for sleep, eight hours for work, and eight hours for recreation and attending to the ordinary routine affairs of life.

Fresh air. Many persons have reported that they require fewer hours of sleep when they spend their nights in the open air, and unquestionably fresh air is good for tired nerves. When sleeping out of doors one may use a sleeping bag to help preserve the body heat. This may be of any thickness suitable to the wearer, and can be washed when necessary. Flannelette blankets which can be easily washed may be used instead of sheets, and a warm gown or wrapper should be worn. Bedclothes that are too heavy are fatiguing; it is much better to provide woolen blankets and lightweight comfortables. In bitter weather it is best to cover the head and ears with a hood. This hood can be made with an opening in front for the face, and a cape to cover the neck and throat. Persons who are not in vigorous health may find it advisable to wear thick stockings or bedroom slippers when sleeping outdoors in very severe weather. A warm sleeping garment of some kind should be used to prevent direct contact with the cold bed and to break draughts of air that may penetrate between the covers and the skin. The bed and bedclothes should be of ample length or the feet will be cold. It is always to be remembered that if outdoor sleeping is to be beneficial, the sleeper must be comfortable. A restless night out of doors is much less refreshing than a night of comfortable sleep indoors.

If outdoor sleeping is not practiced, one should at least have plenty of fresh air in the sleeping room. See that there is plenty of covering for the body, particularly for the feet; then open the windows and let in all the air possible. If you cannot stand a direct draught, place a screen between the bed and the window, or drape something across the bed, like a shawl or sheet to hang between you and the window. Turn off all artificial heat. In a

house heated by a hot-air furnace, there is always danger of the escape of gas ; and, in any case, it is not healthful or restful to sleep with artificial heat in the room. The best-ventilated room is the one in which the air has the right amount of moisture in it and is cool and in motion. The motion of the air is more important than the proportion of oxygen and carbon dioxid it contains.

The ventilation of workrooms also needs attention, for working in a close atmosphere is very exhausting and those who are compelled to labor in unventilated rooms often become tired and irritable. Those who insist upon excluding fresh air from an office or workroom are often very selfish in preventing others from having fresh air. Teach yourself to like it, for it is beneficial to you ; and remember that those who are accustomed to working in a well-ventilated room are greatly inconvenienced and even made sick by a close room.

CHAPTER SIX

HYGIENE OF THE MENSES

NOTHING in a woman's life is more important to her health, her mental capacity, and her powers of accomplishment than her condition each month during the menses, or monthly period. We are told by the doctors and by medical books that this is a perfectly normal function, and that the healthy woman should feel no pain and but little discomfort from it. However that may be, we all know that there are few women who are not somewhat below par at this time. It seems to a girl terribly hard to think of looking forward to this strain on her system, every month, and unfortunately most girls are so young when they first encounter this new condition in life, that they have no judgment to tell them what they ought to do. They disregard warnings, and do ignorant or foolish things which cause them to suffer for years afterward. If they only understood how important the matter of taking proper care of oneself at this time really is, and how serious the consequences of neglect may be, they would not think of taking the risks that in too many cases they do take.

Age when the menses begin and cease. The monthly period usually begins between the ages of twelve and fifteen or sixteen, although in some cases it may come on much earlier and in some cases later. If its appearance is delayed beyond this age, it is best to put the girl under the care of a good physician so that he may watch for adverse symptoms and use such means as he considers necessary to bring the period on. No one except a good physician should prescribe for this condition, for medicines given by some one who has not made a thorough study of this subject may cause a condition of congestion that will bring months of suffering. There is no rule about the exact age at which the menstrual flow will cease, except that the cessation of the menses, or "change of life," usually takes place between forty-five and fifty.

Regularity in menstruation. The normal flow returns once in every twenty-eight days and lasts from three to five or six days.

As in the case of the age of beginning and ending, this varies with the individual, so that no law can be stated. Each woman is a law to herself in this. It may come once in five or six weeks. I have known cases where it has been once in two months and the health was apparently normal. The only rule that can be given is, that each woman's regularity becomes established, and any variation from this in her case would be abnormal. If she has always menstruated once in five weeks and the periods become longer or shorter, her condition is abnormal, though the change may or may not be of importance.

Sometimes when menstruation begins early, it will come with more frequency and greater flow, and later in the development of the girl she may establish a different order, the period returning at longer intervals and the flow decreasing in quantity. With some women the period may last as long as eight days. This is rather abnormal and sometimes indicates a general run-down condition. With the building up of the general health, this time may be shortened.

Occasionally the period may stop entirely. This is always true during pregnancy, often during typhoid fever, tuberculosis, and other wasting diseases. A complete change of climate or of occupation may cause a temporary stoppage. For instance, among nurses training in hospitals many cases have been known of the menses stopping for from three months to a year, with no constitutional effect. Girls going from one part of the country to another to attend school, and taking up arduous school duties, frequently miss several months. Such girls should be in the care of an experienced woman, and if the condition continues into two or three months it is best to report the matter to a physician, that he may note any adverse symptoms. Nevertheless, most physicians will do nothing to bring on menstruation, as they recognize that it should be a natural condition of the body. Should there be headache or intense nervousness, — not merely nervous fear because the regularity of the menses has been interrupted, —

bloating of the body, or other symptoms, then the physician will take measures to remedy these conditions.

Frequent causes of pain at the menstrual period. Pain at the menstrual period does not always indicate inflammation of the uterus. It may have any one of several reasons, and the last thing to be done in relieving it is the treatment of the uterus itself. The uterus lies in the body between the bladder and part of the large intestine. Because of the positions of the large intestine and the uterus, pain in one is often mistaken for pain in the other. More than one case of so-called inflammation of the uterus has been found to be inflammation of the descending colon, and the trouble has been relieved by treatment of the intestine. Sometimes clearing out the bowels with an enema, or loosening the clothes, is all that is necessary to relieve pain.

At the time and shortly before the coming of the menses the uterus becomes slightly swelled or congested, and if the lower intestine is filled with waste matter there is a pressure on this organ. This is one of the most frequent causes of pain during the period. For this reason, if for no other, the bowels should be emptied each day. Leaving the bowels full, to press against the uterus, is one of the most common causes of the falling down or misplacement of the uterus. Clothing should not be worn tight around the waist, because it presses the organs downward, and tends to cause the same trouble. Pain during the period may be an indication of a run-down condition rather than of local inflammation. Many cases of so-called female trouble have been relieved by a good tonic, fresh air, rest, and a general building up of the body. If a girl suffers at this time, every attention should be paid to her general condition and health. Exercise tending to improve the general health is a good thing always, and especially in cases of this trouble. Generally speaking, varied occupation is better than sitting still at this time. To be on one's feet all day, or to be obliged to sit or stand in one position for many hours, will

sometimes cause pain when moderate exercise and some rest would not.

Work during the menstrual period. One of the first questions asked is always: Should I go to bed for a day or two during this time? If a girl is delicate, either from abnormal constitutional conditions or from some inflammation, it is necessary to give up and go to bed for a day or two. But the normal girl will find it unwise and unnecessary to cultivate the habit of giving up entirely each month. If she continues to follow her usual habits of life as far as possible, she will find that she can form the habit of doing whatever must be done, without any ill results. We are creatures of habit, and to form the habit of giving up all active life for a day or two each month means that after a while the body will be quite unable to respond to any demand at this time. There are few positions in life which a woman can fill capably if she must give up one working day each month to complete rest; for she could not depend upon herself and no one else could depend upon her for any real work in the world.

Overwork to be avoided. In many cases there is an influx of nervous energy before or during the first part of the period, which drives the woman to exert herself beyond her strength. She must clean house, finish a dress, attend to a dozen undone tasks which all of a sudden seem of the utmost importance; and when the period really comes on she pays for all this activity by fatigue and pain. This restless energy is only a form of nervousness and should be recognized as such. All necessary work should be done, but unnecessary work or excessive exercise should be avoided. A woman who is accustomed to walking should take the car at this time if walking tires her. Gymnasium work should be discontinued for the same reasons, unless you are an instructor in a gymnasium. Even then try to do as little of it as possible.

Bathing during the period. The body must of course be kept clean, but bathing should be done with judgment. A warm sponge bath may be taken daily. A warm tub bath is not necessarily

injurious, although if the body shrinks from the bath it should not be taken. Hot baths increase the flow and should not be taken unless needed. Cold baths should never be taken, as they check the flow; and a girl should not go in swimming until the period is quite over.

Wet shoes and chilling the body. Getting the feet wet is injurious, but the danger is averted if the wet shoes and stockings are immediately changed for dry ones. If, owing to circumstances, this is impossible, — as in case of getting caught in a storm, — keep on walking until the shoes can be changed, but do not sit still in wet garments. If the feet become chilled, take, as soon as possible, a hot foot bath. Put a little mustard in the water and soak the feet in it. Hot tea and toast or some other hot stimulant will sometimes promote digestion and ward off a chill. It is not wise to take ice cream and cold drinks at this time, except in moderation, because they chill the stomach. Indigestible food should be avoided, as an accumulation of gas in the intestines will cause pain. The general rule for health as well as comfort at this time is, — keep dry, warm, and properly fed, and do not get overtired. Lack of suitable food or clothing, or exposure to cold, may induce a chilled condition, which is harmful.

Medicine during the menstrual period. No girl should take medicine or use any means to bring on or check the flow of blood. If she does this, she is running a great risk of causing acute inflammation of the uterus and its appendages. I have been appalled by the number and kinds of medicines passed from girl to girl among schoolgirls. This should never happen. Few girls know the exact effect of a medicine, and the fact that a prescription is given to one girl in a certain condition is no indication whatever that another girl apparently suffering from the same ailment needs that medicine. A physician, in giving a prescription, considers not only the symptoms detailed to him, but the constitution of the patient, so far as he can judge of it, and he also forms his private opinion of the condition of the patient at the time and tries to

make his prescription suitable to her special case. Strong cathartics should not be taken during the period, as they increase the flow and often cause pain and weakness. Apart from all these considerations, there is great danger that an unauthorized prescription may contain some opiate or drug which no reputable physician would prescribe.

The menopause or "change of life." The menopause or period during which there is a final cessation in the menstrual life of a woman occurs generally between the ages of forty-five and fifty. There are many exceptions to this rule, some women not menstruating after forty and some continuing menstruation until after fifty years of age. During the menopause only one period may be missed at first, or several months may pass without an appearance of the menses. After this interruption the periods may reappear and continue regularly for a while, the flow becoming gradually less profuse until it stops entirely. With some women it stops abruptly without premonitory symptoms and never reappears.

There is, no doubt, a tendency to disease at this time, but a woman should pass through these months without serious complications. Headache, digestive disturbances, and many nervous conditions, such as a disagreeable sensation of heat which rushes over the body at times, and which is usually spoken of as "flushes," are as a rule present. A woman may suffer also from insomnia and may become irritable and sometimes melancholy. However, the custom of attributing all unusual symptoms which may develop in a woman between the ages of forty and fifty to "change of life" has at times resulted in a failure to give the thorough examination which should have been given to determine the real condition present, of which the symptoms were an indication.

The belief that is so universal among women, that they cannot pass through these months without ill health, is one reason for their nervous condition at this time. If a woman is healthy before the menopause begins, she should be able to pass through the period with very little discomfort. At the same time she should do all

that she can do to keep herself in good health. She should be out of doors as much as possible, taking exercise enough to keep herself in good condition but not enough to overtire her. Her diet should be simple and consist only of food that she can easily digest. She should not eat meat to excess nor drink too much coffee or tea, and should avoid all stimulating drinks. The bowels should be kept open regularly, and an occasional dose of sal hepatica or some similar salts may be taken to help relieve headache and prevent "flushes." Necessary rest should be taken through the day, and extremely late hours, excitement, and worry avoided as much as possible.

Dangerous symptoms. There are certain symptoms that may appear during the menopause that are an indication of an abnormal condition, and if they should be present, a physician should be consulted at once. These symptoms are: (1) a profuse bleeding at the time of a period, (2) bleeding between the periods, (3) the reappearance of the flow of blood some months after menstruation has stopped. Any one of these symptoms may be an indication of some condition which can be relieved by a simple operation or (and this is most often the case) may show that there is either a tumor within the uterus or be the first symptoms of cancer. Since the only cure at present known for cancer is to remove the affected part, and since the disease is curable only if this can be done in the early stages while the condition is merely a local one, a physician should be consulted at the first appearance of any of these symptoms. Any delay in this may allow time for the disease to spread and make it impossible to cure by operation or in any other way.

Cancer in women occurs frequently in the breast also, and upon the appearance of a lump in the breast the advice of a surgeon should be asked at once. It is considered best in these days to remove a growth of this kind before it can become malignant. A small lump may be present in the breast for some time and be to all appearance harmless, but at the time of the menopause or at some other time

it may suddenly begin to enlarge and develop into a cancerous growth. Many women conceal such a condition until the tumor has reached such size or become so malignant that the operation for its removal has become a serious one instead of the slight one which would have been all that was necessary at first, or until the disease has so spread throughout the system that it cannot be checked even by a serious operation. The one safe rule when a growth appears anywhere in the body is to consult a physician or surgeon at once.

CHAPTER SEVEN

CONSTIPATION

THERE are few abnormal conditions of the body more common, more the fault of the individual, and more serious in the effects upon the health, than chronic constipation. Most persons fail to consult a physician for the trouble until they have tried various kinds of remedies, and in many families or groups of persons a favorite remedy is passed around from one to another. The remedy too often is some patent medicine, made famous by advertising, of which neither the ingredients nor the effects are accurately known to the user. Such remedies give only temporary relief. They not only do not cure the disease, but often injure the intestines. Moreover, as in all cases where a remedy found beneficial by one person is passed on to another, the difference in constitution may be such that the medicine will be positively harmful.

Causes of constipation. Certain habits predispose to this trouble in women. The sedentary life which they often lead makes them suffer from it more than men. Irregularity of habits, weakness of the abdominal muscles, and unwise methods of dressing also tend to increase constipation in women. The old are likely to be constipated because of their lower vitality, weakness of the muscles in the abdomen and intestinal walls, lack of exercise, and the small amount of food they take.

Constipation is sometimes caused by the fact that the stomach and intestines have sagged down out of place. Normally the stomach lies up close to the angle formed by the ribs and more to the left side of the body than to the right. The large intestine, or colon, in which the waste matter from food is stored, begins on the right side of the abdomen, where the appendix is, and extends up the right side to a point under the liver where it is attached to the rear wall of the abdominal cavity by ligaments. After making a bend it crosses the abdomen just below the stomach and well above the umbilicus (navel) and is attached by ligaments



Dr. A. P. Evans

FIG. 19. Radiograph showing position of large intestine. The transverse colon which should run across the upper part of the abdominal cavity has sagged down until at *a* it lies within the pelvic cavity. At *b* the descending colon is kinked sharply and is adherent to the transverse colon.

to the left wall of the abdominal cavity. Then it bends again and goes down the left side of the abdomen to the rectum. The

rectum is S-shaped, having folds and pockets which hold the substance deposited in them.

When the stomach and intestine are held in place, the feces (waste matter of the bowels) can pass through the turns in the intestine; but when for any reason they sink out of place and the bends in the intestine are intensified, it becomes difficult for the feces to pass through the intestine. A condition of constipation then follows.

A diagnosis of this condition can often be made by examination of the general posture and shape of the abdomen, but such a diagnosis should be verified by an X-ray examination of the contents of the abdomen. All such cases are benefited by special exercises, but should be treated only under the care of a physician.

The principal cause of constipation, however, in old or young, men or women, is lack of regularity in evacuation. Normally the bowels should move once or twice each day, and if, beginning in childhood and continuing through life, this matter were attended to regularly each day by every one, there would be fewer cases of constipation. The right time for an evacuation is soon after eating. When food enters the stomach it induces peristalsis, a wavelike movement which passes over the intestine toward the rectum. It is much easier, therefore, to cause the bowels to empty soon after eating.

The habit of taking cathartics and enemas is a frequent cause of constipation. Other causes are improper diet and lack of exercise.

Consequences of constipation. Among the consequences of constipation are headache, sleepiness, bad dreams, dullness, indigestion of all varieties, irritability, nervousness, bad taste in the mouth, foul breath, nausea, excessive thirst, flatulency, colic, cold extremities, a frequent desire to urinate, sallow complexion, pimples on the face and liability to colds and hemorrhoids or piles. These last are a swelled condition of the veins in the lower intestine or rectum. They are caused by the pressure of hard masses of feces retained in the rectum when the bowels are in a constipated

condition, and by straining during the passage of large masses of feces during evacuations from the bowels. One should always be careful not to strain when having an evacuation.

Hemorrhoids at times become very painful and bleed, and by their intense itching and soreness they cause insomnia, nervousness, and irritability. They should not be neglected, but should be treated at their first appearance, for they may become so bad that an operation will be necessary. Sponging with cold water or witch hazel helps to relieve the itching and soreness, and adrenalin salve and suppositories reduce the swelling and will sometimes cure quite bad cases of hemorrhoids. If suppositories of cocoa butter or gluten are inserted at night and left to lubricate the lower bowel, the danger of irritating the rectum at the morning's evacuation is much lessened. There are many salves sold for the relief of hemorrhoids. Of these the best are Unguentine and a witch-hazel salve.

Symptoms of constipation. The usual test for the condition of the bowels is the number of evacuations daily or weekly. Most persons consider one or two movements a day absolutely necessary, others think five or six a week a normal condition. This is, however, not the sole point to be considered. Symptoms may exist indicating a state of constipation even when there are daily evacuations. The daily movement may not empty the bowels, but may leave hard, dry feces clinging to the walls of the large intestine. There may also be what is called "latent constipation"; that is, the movement of today may not bring away the waste of yesterday, but that of two or three days before. One indication of these two conditions is the passage of hard, round lumps. Another is an occasional attack of diarrhea. Sometimes, in the midst of these soft or fluid movements, small, hard lumps will be passed. The symptoms already noted as consequences of constipation should also be taken into account. With any of these conditions present, a state of constipation may be said to exist.

← **Difficulty of curing constipation.** For several reasons constipa-

tion is oftentimes hard to cure. First, the absolute coöperation of the patient is frequently difficult to obtain. Owing to this, a physician, becoming aware that his directions will not be followed exactly, may prescribe for daily use some medicine which he knows will not injure the patient. If he cannot effect a complete cure, he prefers to do what he can to reduce the ill effects of the disease.

A second difficulty is that the patient does not always understand the length of time needed for a cure, and thus becomes impatient and loses confidence in the physician. The walls of the intestine are muscular, and in a case of constipation of long standing these muscles become weak and sluggish. A systematic, long-continued treatment is then indispensable if a cure is to be effected. The fact that in most cases cathartics have been taken may make it difficult to find a medicine that will relieve, even temporarily. But almost all cases of constipation, even those of many years' standing, will be greatly benefited, if not cured, by consistent and conscientious coöperation between physician and patient.

Curing mild cases of constipation. The habit of going to the toilet at a certain hour each day is frequently all that is needed to correct a mild case of constipation. This should be done whether the bowels are moved or not; the important thing is to choose a certain hour and form the habit of going to the toilet at that time. If it is impossible to take the time for this immediately after breakfast, as in the case of those who leave the house at once to go to their work, some other hour may be selected. Those who must go out early can train themselves to go to the toilet immediately after rising, if they will start peristalsis by drinking a glass of water. An abundance of water should be taken at night, before breakfast, and frequently through the day.

Diet for constipation. The proper regulation of the diet will cure some cases of constipation, and be beneficial in any case. To obtain the best results the diet should be well balanced and should contain six times as much vegetable matter as it does

meat; it should also contain oil, sugar, an abundance of water, and some starch. Dietary changes should be made carefully, and foods which cannot be properly digested should be left out. Sometimes adding to the bill of fare one or two articles having a laxative effect and dropping some one food of constipating tendency will be all that is necessary to relieve a slight attack of constipation.

Foods allowed. Cereals: Oatmeal, cornmeal mush, cracked wheat, hominy, grits, cream of wheat.

Soups: Any soup except thick broths.

Fish: Fresh fish of all kinds, oysters (not fried).

Meat: Bacon, beef, mutton, lamb, chicken, poultry in general, squabs, game, sweetbreads.

Bread: Brown, graham, whole-wheat, corn bread, bran, and rye bread. (No toast.)

Oleaginous foods: Cream, bone marrow, oils, and butter.

Salads: Vegetable and fruit salads with plenty of good olive oil.

Vegetables: Carrots, turnips, onions, beets, cauliflower, spinach, cress, celery, peas, string beans, corn, tomatoes, potatoes, cabbage, squash, lettuce, cucumbers, asparagus, and other vegetables having in them large quantities of bulky fiber.

Desserts and sweets: Sugar, candy in moderation, honey, sirup, molasses, jellies, jams, baked apples; bread, apple, fig, and prune puddings; custards and ice cream.

Fruit and berries: All except bananas, blueberries, and blackberries.

Drinks: Buttermilk, malted milk, milk (not boiled). Coffee is laxative to some people.

Figs are beneficial if taken at any hour, but dates and prunes eaten at night before retiring will help to give a movement from the bowels in the morning.

Foods prohibited. Meats to excess, pork, liver, salted, canned, or smoked meats, too many eggs, boiled milk, or an excessive

amount of milk, cocoa, and chocolate, rice to excess, farina, gruels, macaroni, thick broths, tea, cheese, nuts, blueberries, huckleberries, and blackberries.

Doughnuts, pies, crackers, and cakes.

Massage and exercises. In cases of constipation massage is of great benefit when properly given, as it strengthens the abdominal muscles and stimulates the muscles of the intestine. A five-pound cannon ball or a bowling ball may be rolled over the abdomen with benefit. These balls can be bought at any store selling gymnasium apparatus. The ball should be rolled over the large intestine; that is, up the right side, across the top of the abdomen, and down the left side. The abdominal muscles should be relaxed, and the best position of the body to obtain this relaxation is lying on the back, with the head and shoulders moderately high and the knees flexed.

Walking, running, horseback riding, rowing, swimming, and all such games as tennis and baseball tend to strengthen the abdominal muscles and to increase the tone of the nerve centers that regulate the liver and intestines and assist the circulation of blood through these organs. The practice of taking a few special exercises daily is a good one to establish, as help can be derived in this way, but these exercises should be prescribed by a physician or some one recommended by him, as the cause of the condition should be known before the exercises are prescribed.



FIG. 20. The ball should be rolled up the right side, across the top of the abdomen, and down the left side.

The hot-water enema. The hot-water enema, another remedy for constipation, may be most beneficial when taken under the direction of a physician, but injurious if depended on for the daily evacuation. The custom often is to take large enemas of two or three quarts, and by hanging the bag up very high to force the water well up into the colon, the idea apparently being that the more water and force used the more efficacious the treatment will be. This is not only unnecessary but injurious. When such a large quantity of water is forced high up into the large intestine, it may lodge in that part of the intestine lying above the navel, and by its weight cause a sagging down of the intestine. One to two pints of water is enough to empty the rectum, and is less injurious if taken cool instead of hot. Warm water enemas, taken constantly, help to relax the muscular walls of the intestine, especially if there is already a tendency to weakness in these muscles, and may cause a state of chronic dilatation.

Simple remedies. Medicines should not be taken unless prescribed by a physician, but such simple remedies as these may be used:

Water in abundance.

Half a lemon added to a glass of water and taken before breakfast will sometimes act upon the bowels. It is not injurious, and being persisted in for a week or ten days will sometimes relieve an attack of constipation.

Water with a little salt.

Oils, like olive oils or mineral oils ("Nujol," "Russian Oil," "American Oil") lubricate the intestinal tract and cause a naturally formed movement. They can be taken indefinitely without injuring the intestines or upsetting the digestion. If the olive oil is disagreeable to the taste, season it with salt and lemon juice. The mineral oils are tasteless, but if disagreeable to take undiluted, can be added to cold water. Holding a piece of ice in the mouth just before taking an oil prevents any disagreeable taste. The dose of oil is one to two tablespoonfuls taken at night

and in the morning, or only at night, according to the necessity of the case.

Cathartics and their effects. A cathartic is a medicine which causes evacuations of the bowels. Cathartics are divided into different groups, according to their effect. These groups are laxatives, purgatives, drastics, hydragogues, and cholagogues.

Laxatives are mild cathartics which stimulate peristalsis and give a somewhat softened, almost normal evacuation. Cascara sagrada, citrate of magnesia, glycerin, and olive and mineral oils are laxatives.

Purgatives are more decided in their effects. They increase peristaltic movement in the intestine and are followed by one or more almost liquid movements. To this class of cathartics belong aloes, compound licorice, senna, rhubarb, and castor oil.

Drastic cathartics cause active peristalsis and profuse transudation of fluid through the walls of the intestine, which results in many liquid evacuations, accompanied by griping pain in the intestine. Podophyllum, jalap, colocynth, elaterium, compound cathartic pills, and croton oil are the best known of these drugs.

Hydragogues produce large, watery movements caused by an excessive flow of liquids from the blood into the intestine. To this class belong Epsom and Rochelle salts, Seidlitz powders, magnesium citrate, sodium phosphate, and saline waters.

Cholagogues stimulate the liver, increase the flow of bile, excite peristalsis, and are followed by greenish liquid movements. Calomel, podophyllum, sodium phosphate, and blue mass are cholagogues.

Few physicians today give the more drastic cathartics except in cases of absolute necessity. Such cathartics should not be taken at all unless ordered by a physician. Cathartics of the first, second, and fourth classes, while not so injurious, should not be taken constantly, as not only do they not cure constipation, but some of them will even cause an inflammation of the intestine if taken for a long time in increased doses.

Cascara sagrada taken in large doses will in time inflame the intestine. Aloin, found in many advertised pills, will under some conditions cause an irritation of the rectum followed by hemorrhoids. When rhubarb is taken alone in large doses, the bowel movement is followed by constipation. Senna leaves put in a bag and cooked with prunes will give moderate evacuations, but will not help permanently to relieve the constipated condition.

Castor oil can be used to clean out the intestine quickly in cases of acute indigestion or ptomain poisoning, but each dose is followed by constipation and it will not effect a cure of a constipated condition. Compound licorice powder has practically no curative powers.

Saline cathartics taken constantly are in the end injurious. They extract fluid from the walls of the intestine, induce intestinal catarrh, upset the digestion, cause an anemic condition, and aggravate rather than cure the trouble.

Cork, whole flaxseed, whole mustard seeds, and other indigestible substances are sometimes used. They increase peristalsis in the intestine and cause more frequent evacuations, but are very apt to start inflammation in the intestine. Regulin, a popular remedy, made of agar-agar and cascara sagrada, is the least injurious of these remedies, but even this should not be taken during a long period.

Calomel and blue mass are useful in their places, but calomel, particularly, is taken much too freely. Even when given in small doses it should not be taken frequently. Many people have what might be called the calomel habit, taking heavy doses of this drug upon the slightest excuse. Often when they decide that there are symptoms indicating the need of calomel, there is absolutely no necessity for the dose. Calomel is a derivative of mercury, and in large doses, or in some individuals even when carefully taken in small doses, it may cause symptoms of mercurial poisoning, such as nausea, abdominal pain, diarrhea, and ulcerated mouth. It has a harmful effect upon the teeth, sometimes causing a condition

spoken of as *salivation*, in which the gums recede and the teeth fall out.

One physician who is a specialist in digestive diseases has made the statement that the cause of the illness of at least one third of his patients is the habit of taking calomel. It is an excellent remedy in the hands of an intelligent physician, but should be used only under his direction. Cathartics of any class should be taken only for temporary relief, except in the case of old people, where there is no chance of making a cure; and even in these cases the prescription should be made by a physician.

CHAPTER EIGHT

EARS, THROAT, AND NOSE

THE ears, throat, and nose are so closely related anatomically that a disease affecting one of these organs is likely to affect them all. The various parts of the body are, in fact, far more closely related to one another than one might think, and an ailment which seems to be confined to one organ may be the result of trouble in some other part. It is not safe to overlook any diseased condition under the impression that its effects will be limited to one part of the body; if a cold is neglected and becomes catarrh or bronchitis, the local disease reacts upon the whole system and the general vitality is lowered. The general effects of diseases affecting the ears, nose, and throat should be especially watched, since these ailments are likely to interfere with the breathing and the digestion.

Anatomy of the ear. The ear is not only one of the most important organs in the whole body, but one of the most delicate, and it needs much more careful attention than it usually receives. It is divided into three parts, the *outer*, the *middle*, and the *inner ear*.

The outer ear is composed of the *auricle*, or what we commonly call the ear, and a tube or canal leading into the middle ear. At the inner end of this tube and separating the outer and middle ear is the *tympanic membrane* or "drumhead." The auricle is of a shape suited to catch the wave of sound and convey it into the tube. In the walls of the tube or canal of the ear are glands which secrete wax, which is for the purpose of protecting the canal from the entrance of insects. Normally this is secreted only in sufficient quantity to do its work, and any abnormal production is due to inflammation. Digging into the ear with hairpins or pins will cause an abnormal secretion of wax. One of the common causes of deafness is an overaccumulation of wax in the canal and on the eardrums, interfering with the progress of the waves of sound.

The middle ear is a small, drum-shaped cavity in the temporal bone, called the *tympanum*. It is filled with air which it obtains through the Eustachian tube, from the throat. The Eustachian tube makes a direct connection between the throat and the middle ear. This connection with the throat is cut off by a small membrane which covers the end of the tube like a little lid, and is closed except during the act of swallowing. The tympanum also connects with a number of small cavities or sinuses in the temporal bone. The largest of them is the mastoid sinus, which is in the bony prominence behind the ear.

Within the tympanum are three little bones, the *malleus* (hammer), the *incus* (anvil), and the *stapes* (stirrup), thus named because of their shapes. They form a chain across the tympanum, connecting the tympanic membrane with the inner ear.

The inner ear, like the middle ear, is hollowed out in a very complex manner in the temporal bone. It consists of three parts: the *vestibule*, the *cochlea*, and the *semicircular canals*. This bony labyrinth is filled with a liquid in which like a detached lining lies a membranous labyrinth similar in form to the bony labyrinth. The auditory nerve which connects the ear with the brain terminates in this membrane. The branch which passes from the cochlea to the brain carries the impulses which give the sensation of sound. When a wave of sound enters the external ear, it passes through the outer canal, strikes against the tympanic membrane, and causes the bones of the middle ear to vibrate. These bones

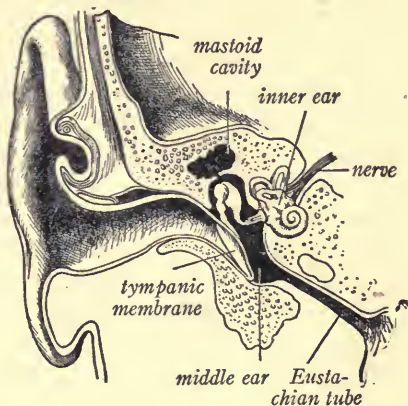


FIG. 21. Diagram of the ear.

are so connected with the inner ear that their vibration sets the fluid in it in motion, and when the waves in this fluid strike against the endings of the auditory nerve the impulses are conveyed to the brain.

Causes of deafness. Deafness may be due to several causes:

(1) *Accumulation of wax in the outer ear.* When this accumulates in too great amounts it should be removed by washing out the ear. When hardened wax has accumulated in the ear, it may be necessary to visit a physician to have it removed.

(2) *Injury to the drumhead.* This is often the result of the air being suddenly forced against it by a violent blow, of perforation by the point of a hairpin or other sharp instrument, or of an accumulation of pus in the middle ear.

(3) *Infections of the ear.* Earache, running ears, abscesses in the ears, and practically all other troubles with the middle and inner ears are due to infections with germs. Very frequently in young children the germs of colds find their way up the Eustachian tube and attack the middle ear as well as the mucous membrane of the nose and throat.

In scarlet fever the ears are attacked, and infections and abscesses in the ears often follow cases of grippe. Persons with infected tonsils and adenoid growths are especially likely to suffer from ear troubles, the germs working up the Eustachian tubes from the infected centers in the throat. Violent blowing of the nose or improper use of the nasal douche may force germs from the mouth and throat into the Eustachian tube and start inflammation there. Unless this inflammation is treated and cured, the walls of the tube become swelled and thickened and the air supply to the middle ear is lessened or even cut off. Sometimes in an infected ear the chain of bones is broken down or the joints between the little bones become stiff. This prevents the transmission of the waves of sound and causes deafness.

Treatment of deafness. Many cases of deafness can be cured if taken in time. Specialists are often unable to cure some par-

ticular case because they were not consulted until too late to make the cure possible. The first symptom of deafness should be the signal for a thorough examination by a specialist. If the treatment is begun upon the first evidence of inflammation in the ear, a quick cure may be possible.

If there is any trouble in the nose or throat, these parts should be treated. It is usually impossible to treat infections of the middle ear successfully with the tonsils or adenoid growths serving as breeding places for germs at the mouths of the Eustachian tubes. A common mistake in the treatment of ear trouble is that of discontinuing treatment before a complete cure is made. If the inflammation has continued for months, or if the tubes have become at all thickened, it is out of the question to effect a cure in a short time.

Earache. Earache should never be neglected. Owing to the openings between the middle ear and the sinuses in the bone about it, an abscess in the ear may spread until the bone itself is affected. Pus must find an outlet. When contained in a bony substance it is not only extremely painful, but, unless an outlet is provided, it will penetrate into the tissue or through the membrane. Thus an abscess in the ear spreading into the mastoid cavity causes mastoiditis, and unless relieved by operation, may penetrate into the brain and cause an abscess in the brain which eventually may be fatal. Nothing will check the spread of infection in the ear so effectively as an opening in the tympanic membrane through which the pus may escape. The small, clean-cut incision made by a surgeon will close, and does not injure the membrane as it will be injured if the pus is allowed to force its own way through. If there is earache, no time should be lost in consulting a specialist.

Temporary relief of pain in the ear. One must be very careful in inserting anything into the ear, for digging into the ear canal not only increases the accumulation of wax, but may cause a condition of inflammation in the ear or even perforate the drumhead. For the relief of pain, hot cloths or a hot-water bag may be applied

externally; but hot oils or medicines should never be dropped into the ear, nor should poultices be applied, nor the ear syringed out, except by the order of a physician.

Irrigating the ear. The simplest and best way to irrigate the ear is with an all-rubber ear syringe or a fountain syringe and a small point, using tepid water and not hanging the bag higher than is absolutely necessary to allow the water to run. No force should be used. The majority of piston syringes get out of order soon, and are hard to work smoothly.

The throat. It is not necessary in a small book like this to enter into a full description of the anatomy of the throat, but it is important to call attention to the fact that any disease of the throat must inevitably affect the system very directly. One of the commonest causes of such disease is adenoid growths or an infected condition of the tonsils. The healthy state of these parts

is of the greatest importance to every individual, and has much to do with the health and development of children.

Adenoids and infected tonsils. The tonsils are two bodies of soft tissues, one on either side of the throat. High in the back of the throat behind the openings from the nose lies a third, small tonsil. When this third tonsil becomes enlarged, it is called an *adenoid* or an *adenoid growth*. During childhood tonsils are al-

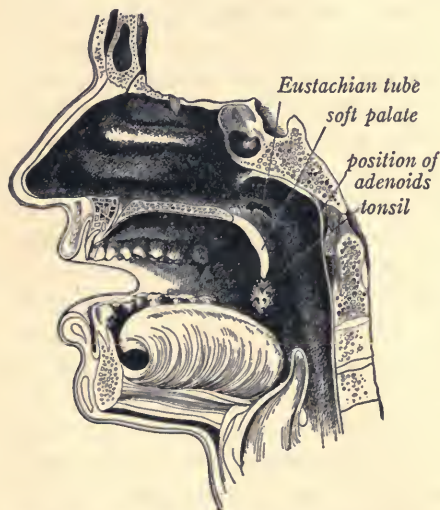


FIG. 22. The nasal passages, mouth, and throat.

ways somewhat enlarged, but unless they become diseased they

gradually become smaller, until, in adult life, they can hardly be seen at all.

Because of their position in the throat and because of their spongy nature and the fact that they have crypts and openings leading down into them, the tonsils often become infected with germs. They then serve as breeding centers for pus-forming bacteria; and in the diseased tissues of infected tonsils diphtheria germs, tuberculosis germs, and perhaps the germs of other diseases, like influenza, colds, and pneumonia, find a fertile soil for growth. It is believed, also, that germs and toxins from the tonsils are carried through the whole

body and cause such diseases as hardening of the arteries, rheumatism, and other chronic ailments. In many cases of chronic infection of the tonsils there is no pain at all, and the trouble cannot be detected by casual examination.

Effects of adenoids and enlarged tonsils. A child having enlarged tonsils and adenoid growths has difficulty in breathing through the nose, and sleeps with the mouth open. The nose, having been evolved for breathing purposes, warms the air as it enters, and the sticky mucous membrane with which the nasal passages are lined catches the dust and thus purifies the air. When cold air is breathed in through the mouth, it is taken directly into the throat and passes unwarmed even into the trachea and bronchial tubes, and the impurities it contains have no chance of being sifted out, but are drawn into the air passages and lungs.

A child with adenoid growths does not develop as it should. As a rule such children are pale and nervous, do not sleep well, have little appetite and poor digestion, contract diseases readily, and are more or less retarded both in mental and physical development. Frequent colds and abscesses in the ear, even deafness,



FIG. 23. An adenoid growth in the throat seen from the front. (After Wingrave.)

may result. After the removal of the tonsils and adenoids the improvement is marked. Backward children often become mentally alert, their physical development improves, and in a year or two after such an operation the child may be hardly recognizable. Only a skilled surgeon, of course, should perform this operation, and the patient should be given an anæsthetic. Although a simple operation it is a delicate one, as the organs lie close to important blood vessels.

Operations on the tonsils and adenoids. Any one who has seen a case of diseased tonsils and adenoids before and after the operation for removal would never hesitate about deciding to have this operation performed upon a child. The increased appetite, added weight, and change in mental and physical development are unmistakable. It may be hard for the parent to consent to the operation, but the longer a diseased tonsil is left in the throat, the weaker the body becomes and the greater is the danger from the operation; also the improvement after the operation has been performed is far slower.

Many cases have come under my notice in which the result of an operation on a child affected the parents in a very interesting manner. In one family, in which the father insisted that he did not believe in operations in any circumstances, the tonsils of one child became so diseased that the physician in charge refused to take the responsibility for the patient's life without an operation, and the father was obliged to consent. The improvement in the child, both physical and mental, was so extraordinary that the father has not only had his second child operated upon, but frequently advises other parents to take their children for examination, and even blames them for hesitating in case the operation is advised. One boy whom I knew was so thin, at the age of four or five years, that he was a pathetic sight. He had never had an appetite, and had to be coaxed and persuaded to eat at all. A year after the removal of his tonsils his mother was heard to say that she almost wished that part of them could be put back because

it was so difficult to get enough for him to eat. Now, after four or five years, he is a fine, well-grown, sturdy boy, very much alive, mentally and physically.

The immediate bad effects of such an operation last only a short while. The child may show little general improvement for possibly two or three months, but at the end of that time the gain will begin, and one will never be sorry that the operation was performed. For two or three days after the operation the patient should be kept in bed, and should not be left alone for fear of hemorrhage. This rarely occurs, but is a possibility. If it does occur, a physician should be summoned, the child should be kept absolutely quiet, and ice compresses should be applied on the outside of the throat. For a few hours there will be vomiting of mucus and blood. This blood is not an indication of hemorrhage, but is the blood which has been swallowed during the operation.

The child should not become overfatigued, or exposed to sudden chill, and should be kept on liquid diet for two or three days. Ice cream is permitted by most surgeons soon after the operation. It is nourishing, and cooling to the inflamed throat, and is frequently a great help in keeping a child contented during the discomfort of the first two or three days.

Anatomy of the nose. The two nostrils open back into a chamber which is divided into two parts by a thin bone called the *septum*. Projecting out from the walls of these two chambers are other thin bones of irregular shape which are called the *turbinated bones*. When the air is drawn into the nose, it passes over the turbinated

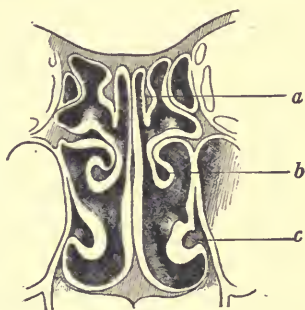


FIG. 24. A cross-section of the nasal chambers, showing the turbinated bones (*a*, *b*, and *c*) over which the air passes. The thin dark line in the center is the septum, which separates the two sides of the nose. The mucous membrane is shown in white.

bones and is thus warmed and cleansed of its dust. In the bones of the face are cavities called *sinuses*, which connect by small

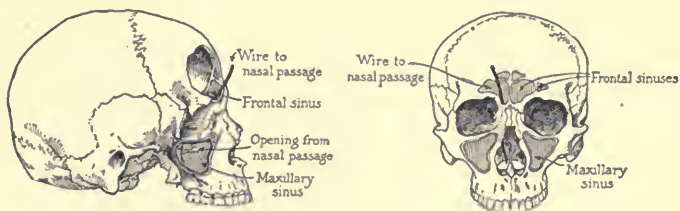


FIG. 25. The skull, showing the location of the frontal and maxillary sinuses.

openings with the two chambers of the nose. In the forehead are the *frontal sinuses*; in the cheek bones the *maxillary sinuses*; and above and to the back of the nasal chambers are the *ethmoidal* and *sphenoidal sinuses*. These sinuses are air chambers and are lined with mucous membrane of the same nature as that found in the mouth, nose, and throat.

Abnormal growths in the nose. The nose may become stopped up and breathing be interfered with by the growth of parts of the mucous membrane into what is called *polyps*. In a certain diseased condition of the nose the turbinated bones become thickened and partly close the opening of the nostrils. Or the septum may become bent and bowed out to one side so that it partially or almost

entirely blocks one side of the nose. These conditions will cause mouth breathing as surely as will adenoid growths, and such growths should be removed by operation, to prevent the evil consequences of mouth breathing and promote the general health. There can be no wholesome physical development without abundant fresh air for the lungs.

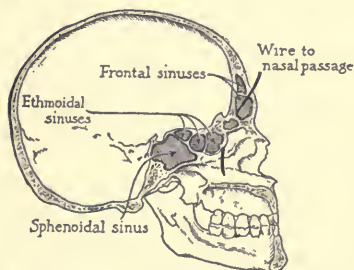


FIG. 26. Section through skull, showing location of ethmoidal and sphenoidal sinuses.

CHAPTER NINE

COLDS

THERE are few subjects upon which it is more difficult to advise than that of preventing and curing colds, because our knowledge of this subject is inadequate and incomplete. Colds are now known to be germ diseases, and a number of different germs that grow on the mucous membranes of the respiratory passages may have a part in causing them. The acute epidemic colds that sweep whole communities are doubtless caused by especially virulent germs that are handed on from one person to another. Just how the germs of chronic colds and catarrhs from which many persons suffer are related to the germs of epidemic colds is not yet well established. Perhaps they are entirely different kinds of germs ("secondary invaders") that attack the mucous membranes after they have been weakened by epidemic colds and succeed in making in them a more or less permanent home; or it may be that the germs of acute colds in some cases may become changed and in a less virulent form become the cause of chronic colds.

It is common for those who have been camping out and sleeping in the open air, or for lumbermen fresh from the pure, cold air of the woods, to contract a cold immediately on returning to indoor life. This makes it certain that a cold, in spite of its name, is caused not by cold on the body but by germs that pass from one person to another. Like consumption and catarrh, colds are most prevalent among those who keep their windows closed and are afraid of drafts, even when they are warmly clothed.

Prevention of colds. The conclusions that we can reach in regard to colds are (1) that a cold is caused by the presence of germs, and (2) that by raising the resisting powers of the body attacks of colds may be in some cases avoided and in other cases made less prolonged and less severe. Our efforts toward avoiding these ailments must, therefore, be directed to keeping the germs from entering the body or to building up the health so that the body

will be strengthened in its resistance to the germs. For the average person it is probable that the only sure protection against epidemic colds is the avoidance of the germs, just as the avoidance of the germs of measles, scarlet fever, and other acute infections is the only certain safeguard against these diseases. Against the slower chronic colds a vigorous condition of the body is the best defense.

The germs of colds may be breathed in from droplets sneezed or coughed into the air in elevators, crowded buildings, and street cars. They are found on public drinking cups, towels, pencils, and other articles handled by infected persons, and they may be transferred directly to our hands from the hands of such persons. For this reason one should not use public cups and towels if their use can by any means be avoided. We should never put a pencil or coin into the mouth, and the hands should not be brought to the mouth or face and should not touch the food that we eat unless they have been freshly washed.

After being with one who is suffering from a cold, it is well to wash the hands thoroughly with soap and to douche the nostrils and use a gargle. Normal salt solution — one teaspoon of salt to a pint of water — is excellent for the latter purpose. The douche of salt solution may be followed by one of oil, or vaselin may be put up the nose with the little finger and snuffed back. The douche dissolves the mucus in the nose, and the oil is soothing and healing to the mucous membrane.

Low resistance to germs may be caused by indigestion, constipation, overfatigue, lack of fresh air, want of sleep, want of proper food, or in fact by anything which lowers the general bodily vitality. The sudden chilling of the body by going out into the cold or standing or sitting in a current of air without sufficient protection may also tend to lower the resistance to germs. Getting the feet wet and keeping on the wet shoes, or sitting in damp clothes, has a similar effect. Sometimes dust will cause an irritation of the mucous membrane, permitting the development of disease germs.

One cold often leads to another because of the lowered bodily resistance following the first attack, and because the semi-inflamed mucous membrane makes a more inviting soil for the growth of the germs.

A person subject to colds should try in every way to put the body into that condition of strength and good health which will enable it to resist the disease. Diet should be carefully considered, and should include a variety of digestible foods, but nothing not easily digested. The bowels should be kept moving regularly. Exercise in the fresh air and a proper amount of sleep are also important. Sleeping out of doors is one of the popular preventives of cold; both the abundance of fresh air and the hardening of the body are helpful. It should not be done first in winter, but the practice should be begun in summer and continued through the cold weather. The bed clothing should be warm, and one should not continue outdoor sleeping if unable to keep warm (page 31). Cold baths, taken properly, are of benefit; salt rubs stimulate the skin and give tone to the nervous system; a cold shower may be beneficial (page 5).

Curing a cold. Upon feeling the first symptoms of a cold, such as chilliness, fever, headache, or sore throat, it is best to go to bed, and to clear the bowels out thoroughly with a laxative. Hot lemonade with a slight stimulant in it may also be beneficial, but if taken, it should be immediately before going to bed. A hot bath will help to draw the blood away from the congested parts and equalize the body temperature. The body, especially the feet, should be kept warm, water should be taken in abundance, and only the most easily digested food should be eaten.

Many medicines for curing colds are sold, and some are helpful if taken in the first stages of the disease. Many, however, are harmful, and no medicines should be taken unless advised by a physician. Steam inhalations are useful for clearing out the nostrils, but should not be taken immediately before going out of doors. There are several types of apparatus sold for use in taking

steam inhalations, but a satisfactory substitute can be made with a pitcher and a newspaper or towel folded into a funnel shape.



FIG. 27. A funnel for steam inhalations, made by rolling a towel and a paper together.

The boiling water and medicine are put in the pitcher, and one end of the funnel placed over the pitcher and one end over the face. A solution which is often used for a steam inhalative is made of tincture of benzoin, one teaspoonful to one pint of water.

Blowing the nose irritating to the mucous membrane. The membrane within the nose and the skin outside are irritated by constant use of the handkerchief in blowing the nose. This can be avoided by the use of oil or vaselin, which also helps to keep the nose clear during the night, and is particularly good in the case of infants and young children. Liquid vaselin may be used, and with children may be injected gently into the nostril with a medicine dropper. A wooden toothpick or match upon which a pledget of absorbent cotton has been twisted, may be used to insert vaselin. When blowing the nose during a cold or after the use of a spray, the sides of the nose should not be compressed with the fingers, but the handkerchief should be held in front of the nostril, and with the mouth slightly open the nose should be blown free. Blowing the nose violently while one side is closed may force air and germs into the Eustachian tube and into the sinuses of the bones of the face, and may start inflammation in those parts (page 60).

Chronic colds. Colds in the head should not be allowed to continue until chronic. With chronic colds, the membranous lining of the nose and the thin bones within it may become thickened, or the infection may spread into the various sinuses and cause inflammation lasting for weeks and months. When pus

forms in the sinuses, there is frequently pain and headache. There is also a steady discharge from the nose and possibly into the throat, and at times this causes the breath to have an offensive odor.

In many chronic colds the seat of the trouble is some focus of infection in the tonsils or in some of the sinuses in the head; or the difficulty may be that enlarged or bent bones interfere with the proper drainage of the nose (pages 59-60). In any case a specialist should be consulted and treatments be given, or if necessary, an operation performed.

CHAPTER TEN

THE EYES

THE eye is one of the most delicate and easily abused organs of the body, and undoubtedly the most carelessly used of all. Its formation is exquisite, its muscular arrangement wonderful, and its nervous mechanism complicated and curious in the extreme. Some of its muscles are so delicate that they can be seen only under the microscope, and at the same time they are powerful enough to do a work far greater in proportion to their size than that of any other muscle in the body. It is fine, close work that puts a strain on the eyes; and so much work of this kind has come into our modern life that the demands on these sensitive organs are far more severe than the eyes of primitive man were called on to meet. As a consequence, much inconvenience or even actual illness may be due to trouble with the eyes, and it is important to know how to relieve them from unnecessary strain.

Structure of the eye. The pupil of the eye expands or contracts according to the amount of light admitted. Behind the pupil is a lens which focuses the light as does the lens of a camera. The lens of the eye changes its shape according to the necessity for far or near vision, becoming flattened when distant objects are looked at and rounded out for seeing objects close at hand. The muscles which regulate the form of the lens are so delicate and fine as to be named the *ciliary*, or hairlike, *muscles*.

In addition to the changes that take place within the eye for clear vision, the eye as a whole must be turned in its socket toward the objects we wish to examine. These movements are brought about by external muscles, six of which are attached to each eye. When these muscles do not do their work effectively so that the two eyes are not directed toward the same object, the person is said to squint or to be cross-eyed. To look at an object held close to the eyes requires that the two eyes be turned inward and throws a strain on the muscles that cause this movement. For this reason close work may strain not only the muscles that govern the move-

ments of the eye as a whole, but also the ciliary muscles that regulate the shape of the lens.

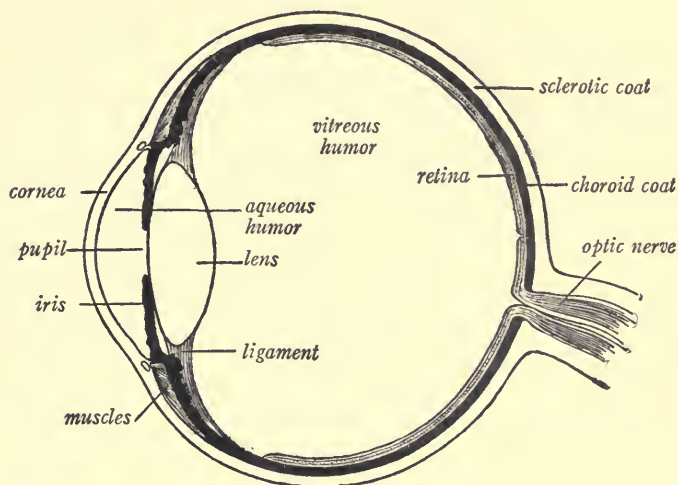


FIG. 28. A diagram showing the structure of the eye.

It should be noted that, in young children who are cross-eyed, the failure to move the eyes together is due not to any trouble with the muscles but to the fact that the sight in one eye is weak and that eye is not being used. The difficulty is that the eye is near-sighted or far-sighted or is in some other way defective, so that the image on the retina is indistinct. The visual impulses from this eye are therefore disregarded and the eye is allowed to move about at will instead of being directed with the other eye toward objects that are being looked at. The trouble can be cured only by glasses that will remedy the refractive difficulties and cause the image to be sharply focused on the retina. This should be done in the very early years of life, for if the eye is not used through childhood the sense of sight in it is practically lost. Later an operation on the muscles may improve the appearance of the person, but it will not

make the eye an efficient organ of vision. Carrying the head to one side is an indication of trouble with the eyes.

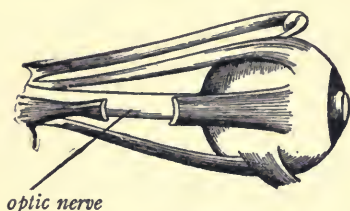


FIG. 29. The muscles that move the eye.

Saving the eyes from strain.

One of the commonest ways in which the eyes are strained is in reading books of too fine type, or type which is blurred and indistinct. If this is necessary, the reading should not be kept up for too long a time, and the light should be good. Another fruit-

ful cause of strain is reading in street cars or other places where it is impossible to hold the page still, and this should not be long continued in any case. Reading in bed is often a strain on the eyes, not because the position of the body affects the eyesight, but because most persons reading in bed have a poor light upon the book, and frequently hold the book in an awkward position, so that it strains the external muscles of the eyes to keep them directed on the page. If the book is held so as to be directly in front of the eyes as when sitting, and the light shines over the shoulder on the book, reading in bed is not particularly injurious; but most bedrooms are so arranged that the light is in the center and shines directly into the eyes of the reader lying in bed. Light should never be allowed to shine directly into the eyes. There is such a thing as too much light. A strong electric light, falling on the book in such a way as to make the page a white glare, is very bad for the eyes, and still worse is the cross-lighting in which the light from two strong lamps at once falls on the book from different directions.

Most people can remember having read for a long time in a failing light without being conscious of a strain upon their eyes, and then finding, after resting the eyes for even a minute, that they could not see to go on. In such a case the eye muscles have gradually and with increasing effort accommodated themselves to the strain of

focusing the eyes upon the page, in a light growing dimmer and dimmer. The instant that they are relieved after such a strain they relax, allowing the eyes to return to their normal condition, in which reading by such a light is impossible. The effort to resume reading after the reaction subjects these muscles to a strain which is felt at once.

Other ways in which the muscles of the eye are overtaxed is by going too frequently to the moving pictures, by rapid traveling in automobiles with the eyes unprotected, and by sticking too closely to work like embroidery, reading, writing, sewing, or knitting, without giving the eyes a chance to rest. Sewing on black stuff is especially fatiguing to the eyes.

There are two ways of relieving such a strain, if the taxing occupation is a necessity. One is to lift the eyes from the work as often as possible and look off into the distance. This allows the muscles to relax and rest. The other is to accustom oneself as far as possible to work by the sense of touch. It is perfectly possible in many occupations to do the work well without using the eyes half the time. Typewriting is now taught by the touch system, and as every one knows, an experienced knitter can knit in the dark. The strain of using the eyes to follow the motions of the fingers is not only bad for the eyes but for the nervous system, which directs the eyes and receives the impulses from them.

Symptoms of eyestrain. We are constantly receiving signals from the eyes, warning us of overwork, but we have become so accustomed to this condition that we ignore the warning even when we understand exactly what it means. One of the symptoms of eyestrain is drowsiness. If, after using the eyes for a time, one becomes drowsy, it is often an indication of fatigue of the eye muscles. Other symptoms are twitching of the eyelids, or a heavy, peculiar feeling over the brows, spots before the eyes, bloodshot eyes, wrinkles from the eyes and down the middle of the forehead, and frequent headaches.

Besides the direct symptoms of eyestrain, there are various

reflex symptoms. Car sickness from looking out of car windows, indigestion, and various nervous troubles belong to this class of symptoms, and may often be cured by putting on proper glasses or having the eyes treated.

So-called "wild hairs," or hairs which turn into the eye, are indications of inflammation of the lids, for which one should consult an oculist. Sties are caused by inflammation of the lids, and persistently red lids should be treated.

Defective vision in children. It is generally believed by physicians that at least one fourth of the school children of this country have defective vision. In numerous cases such defects are not discovered until the children have been retarded, mentally and physically, by the strain undergone by the brain and nervous system in the effort to see clearly. Such a strain may cause headache, fatigue, nausea, nervousness, and irritability; and in addition to this, if the child is, like many children, too proud to admit that he does not see well, various other disadvantages may be incurred. Since the eyes of a child are used constantly at school, any ocular defect interferes very seriously with his progress in education.

Besides the difficulty of reading easily, defective eyesight entails a great strain in such lines of work as handicrafts, drawing, and blackboard work, and in many games. Many stupid and backward children, and even many insubordinate children, in schools have been transformed into normal pupils after being fitted with the proper glasses. Children's eyes should be examined before they enter school, and the parents should keep watch to see that as they grow older the children do not engage in occupations tending to overtax the eyes. It is to be hoped that some day all children will be thoroughly examined physically from time to time, as part of the routine of their school life, and that all remediable defects of eyes, nose, throat, or other parts of the body will be corrected early in life.

Glasses. The fitting of glasses is skilled work and should be done only by one who has had thorough training for it. A good

oculist not only gives the prescription of his glasses, but examines them after they are made, that there may be no mistake. Do not go to an optician for glasses; to do so is like going to a druggist for a prescription. Improper glasses often cause eyestrain because they are too strong or too weak, do not have the lens centered exactly in front of the eye, or in some other way do not fit the eye. Thus the eye is actually worse off than it would be without glasses.

Treatment of the eyes. Few accidents of a minor sort are more painful than cinders or specks of dust in the eye. If when traveling in the cars one feels something in the eye, the eye should be held open, that the secretion of tears may wash the object out. If the eye is closed, the lid holds down the cinder or bit of dust and presses it into the eyeball. Rubbing the eye is the very worst thing to do in such a case. Foreign matter, such as a flaxseed or an "eyestone," should not be inserted into the eye to remove a speck. It is occasionally effective, but as a rule it tends to inflame it. It is better to get the foreign particle out by washing the eye with boric acid solution or wiping the offending particle out with clean gauze or a handkerchief. If the lid is drawn back over a pencil, the speck will possibly be discovered.

A saturated solution of boric acid can be used freely for washing the eyes, and if the eyes are strained or inflamed it is soothing and healing. The solution should be carefully prepared, for if the powder is not thoroughly dissolved it may irritate the surface of the eyeball; for this reason it is best to have it prepared at a drug store. A pipette or eye dropper can be used for injecting the solution into the eye, and this pipette should be used for no other purpose, or the eyes may be washed with an eye cup, which may be purchased at any druggist's. No other solution should be put into the eyes without an order from a physician. Witch hazel, which is sometimes used, is not injurious in itself; but it is sometimes prepared with wood alcohol instead of a pure grain alcohol, and wood alcohol is most injurious to the eyes.

When drops are put into the eye, it will cause much less pain if

the lid is pulled down and the drops allowed to fall on the edge of the lid, than if the drops fall directly into the eye. If the drops are to remain in the eye, one or two are all that are necessary, as more will run out. In taking care of an infected eye it is necessary to be very careful, as most such diseases are highly contagious. It is necessary to take care, not only to keep the infection from being conveyed to the eyes of another person, but to prevent infection spreading from one eye of the patient to the other. A fresh piece of cotton should be used for each eye in turn.

Causes of eye weakness now recognized by opticians are infections from decayed teeth, diseased tonsils, or chronic colds with infected sinuses.

CHAPTER ELEVEN

EFFECT OF POSTURE ON HEALTH AND EFFICIENCY

FASHION has for so long dictated the shape of the body that many persons seem to have forgotten the reasons for its original form. They consider it only from the standpoint of beauty and as a means of showing off beautiful clothes, and, strange to say, as Dame Fashion dictates changes, our idea of beauty of form changes also; what today we consider a deformity, next month we may be working hard to cultivate. Many persons seem not to appreciate the real beauty of the well-formed body poised as it should be, or what the effect upon the health is when this poise is lost and the body has become unshapely. This lack of appreciation no doubt comes largely from ignorance of the real purpose of the body, of the wonder and beauty of its formation, and a failure to realize how by carelessness and lack of thought this wonderful machine may be injured and prevented from doing its perfect work. That my readers may have a better knowledge of their bodies, I have introduced here a



FIG. 30. Poor posture. Knees are relaxed, shoulders stooped, head drooped forward; chest is flat, abdominal muscles relaxed. The weight falls back of the heels, throwing center of gravity back of body support.

brief description of the human body and a discussion of the structure and proper relations of some of its organs and parts.

The human body. To the student of anatomy and physiology, the body is the most wonderful machine in the world. The more he studies it the more he realizes that every part of it, no matter how small, how seemingly unimportant, has its own special function or work, and that all the parts together make up a wonderful whole, built for the greatest efficiency. Each organ is a complete unit in structure, and each has a function that it definitely performs. Yet all the organs are built into one whole, infinitely more complex in both structure and function than any of the parts.

The framework of the body. There are in the body over two hundred bones of many different shapes and sizes. Where strength is needed, the bones are heavy. Where flexibility is desired, they are short and small and held together by powerful ligaments and muscles. Where protection is the chief function, the bones are flat and broad like the bones of the skull which inclose and protect the brain.

In the neck and in the back of the trunk is a chain of small bones, called the *vertebræ*. Each one is separated from the next by small disks of soft, compressible cartilage or gristle, and they are held together by strong ligaments and muscles. All together they form the spinal column, which stiffens and supports the body. In the middle of this column of bones is a canal through which runs the spinal cord, thoroughly protected by the walls of the *vertebræ*. From the spinal cord, through little openings in the *vertebræ*, nerves go out to all parts of the body. The spinal column, because of the shape of its bones and the softness of its disks, is flexible, capable of being bent in any direction.

The flexibility of the spinal column continues largely through life, although not to the same extent in an adult as in a child; for through the years of childhood the disks are gradually becoming hardened and are taking the form into which they are forced by the carriage of the body. In the properly poised, erect body the



FIG. 31. Poor posture. The upper part of the body is too far backward and the weight falls on the heels.



FIG. 32. Good posture. The weight is well forward, chest elevated, shoulders free, abdominal and waist muscles firm.

disks are regular in shape, and, when looked at from the back, the vertebral column forms a straight line from the neck to the buttocks. If the body is allowed to droop forward and the



FIG. 33. Bad posture. The weight is on one foot, the right hip high and the right shoulder low. This position may result in spinal curvature.



FIG. 34. Correct posture. The weight is on both feet, and the hips and shoulders are even. Note the more pleasing effect as a whole.

shoulders and hips to become uneven, — one high and one low, — there is an uneven pressure put upon the disks between the vertebræ, which causes them to develop unevenly and as they harden for adult life to become wedge-shaped, thin on one edge and thick on the other. Other joints in the body also are influenced by the

position in which the body is habitually held, and as all bones of the body become harder as the individual reaches adult life, the joints become set. It is therefore a hard and tedious matter to change the way the bones fit together and the carriage of the body, after adult life has been reached.

Twelve of the vertebræ have articulated or joined to them twenty-four ribs, twelve on each side. At the front of the body the ribs are joined to the breastbone, so that vertebræ, ribs, and breastbone together form the framework of the chest. The bones of the shoulders are large and loosely attached for strength and flexibility. Those of the pelvis are firmly united for strength, and give support to the organs within. Attached to the framework of the chest are many muscles, among others the diaphragm, the broad muscle which separates the cavities of the chest and abdomen. Within the cavity inclosed by the chest walls and the diaphragm are the lungs, the heart, and the large arteries and veins.

Arrangement of muscles. There are five hundred muscles in the human body. They are arranged in antagonistic groups which work in opposition to each other. Every group of muscles has its opposing group, and these groups balance each other; for example, one group supports the back when leaning forward, another group supports the front of the body when leaning backward. If one of these groups becomes weakened from any cause such as paralysis, strain, or lack of use, it no longer pulls evenly against its antagonistic group; these unopposed muscles then overpull and cause more or less change of form in the body, which may become sufficiently great to cause a real deformity.

In the properly poised body all muscles have a slight tension. Each group of antagonists is working slightly, holding the part they move poised between them, so that movements can be quickly and easily made. Professor W. P. Bowen, in his book on *Applied Anatomy and Kinesiology*, says:



FIG. 35. Poor posture in walking. The toes are turned outward instead of pointing straight forward. In correct walking the heel strikes the ground first, but the weight is immediately transferred to the ball of the foot. It is not possible to make this transfer of the weight unless the toes point forward.

"Muscles that are much used are apt to have more tone than those used less; when this is the case between two antagonists, the position of the joint upon which they act is apt to be out of normal position because of the greater tension of the one most used. Example: Women's elbows are semi-flexed because extensors are not used. Habitual posture depends much on muscular tone, and correction of posture is secured by improving the tone of one muscle and stretching its antagonist."

Position of the abdominal organs. The walls of the abdominal cavity are formed by the spinal column, the upper part of the pelvic bones, the diaphragm, and the abdominal muscles. When the body is held erect, the bones and muscles form ridges or shelves upon which the abdominal organs rest. They are held securely upon these shelves by ligaments, fat, and the pressure of the abdominal muscles. In a faulty posture the stooping forward of the body changes the position of the supporting shelves and relaxes the abdominal muscles, and the abdominal organs,

lacking support, sag down from their positions. The organs in the pelvis lie below a ridge formed by the lumbar vertebræ, the pelvic bones, and the abdominal muscles. When the abdominal organs are held firmly in place, the pelvic organs are protected against pressure from above, but with the abdominal organs out of place the pelvic organs also may become misplaced.

Correct poise in standing. In a correct standing position the feet should be straight or almost straight (i.e., toes pointing forward); the body should be swayed forward from the heel up until its weight rests upon the balls of the feet; the head should be held well up and back, with the chin rather low; the abdominal and knee muscles should be tight, and the body stretched as tall as possible. The shoulders should not be thrust forcibly back but be held rather relaxed, for if the body is correctly held in other ways the arms and shoulders will assume the positions best for them.

When standing relaxed one must be careful not to let the body become unbalanced, one shoulder and one hip high and the spine twisted, for this is one of the causes of curvature of the spine. If



FIG. 36. Correct posture in walking. The toes are pointed straight forward, making easy the rhythmical transference of the weight from heel to sole in progressing forward.



FIG. 37. Bad posture in walking. The knees are relaxed, the shoulders stooped, the head dropped forward, and the chest flat; the waist and abdominal muscles are relaxed.



FIG. 38. Correct posture in walking. The abdominal and waist muscles are contracted, the chest elevated, the shoulders free, and the weight is carried well forward.

the shoulders are held evenly balanced and the middle line of the body brought over the supporting leg and foot, the weight of the

body may be taken off the other foot and leg and the foot may even be lifted from the floor without affecting the balance or the evenness of the shoulders and hips. Any change in the method of using the body is difficult and tiresome at first, but if persevered in the muscles will readjust themselves and the correct posture will become comfortable and the incorrect one tiresome.

Correct poise in sitting.

When one is sitting, the body should be well back against the chair, the head up, and the chin in. In a properly made chair it is possible to sit erect or lean back

without disturbing the correct position of the back and shoulders.

Effect of posture on efficiency. When the body is correctly poised it is like a perfectly balanced machine, for all its parts are so adjusted that there is no particular strain on any one part. In addition to this the circulation is not interfered with, so that organs, muscles, and nerves are healthy and active. The lungs can expand naturally, all the organs have room to do their work, the muscles are ready, the brain is alert; and it is a known fact that those whose bodies are poised aright are as a rule more healthy, can move more quickly, can accomplish more, and can endure much more than those whose bodies are imperfectly poised.

Causes of faulty posture. The majority of children are born straight and continue straight throughout the first years of their



FIG. 39. Bad posture in sitting. The head is thrust forward and the abdominal organs are crowded together, preventing a free circulation of the blood and lymph through them.



FIG. 40. Correct posture in sitting.

lives. Frequently the first cause of incorrect posture is the improper hanging of the clothes. Children's clothing weighs from three to five pounds, and to this weight is added the pull of the garters supporting the stockings, which are often so fastened that the full weight comes on the movable shoulders. Such a weight carried for a short while means nothing; but, when carried all day on the flexible shoulders, it gradually causes them to bend forward. The supporting underbodies which carry most of the weight of the clothing and to which

the garters are attached should be cut to fit close about the neck, so that the strong muscles and less movable collar bone in that region, and not the flexible bones at the points of the shoulders, may support the weight.

Another cause of faulty posture is the lack of suitable chairs for children in most homes. After the days of infancy, the growing boy and girl are forced to use the chairs made for an adult. Not being able to sit back on the chair and at the same time touch the floor with the feet, they sit forward on the seat, reaching with the toes to the floor. If they wish to lean back, they lean with the upper part of the back touching the chair, and then lean the head forward to see to read. This position on the chair thrusts the shoulders forward and straightens out the natural curve of the spinal column in the lumbar region, and it becomes such a habit

that often, later in life, when grown to manhood and womanhood, the person continues to sit in this way.

Some few years ago there was a great outcry against the desks used in schools. People recognized the fact that, in a class formed of children of different sizes, one size of desks could not fit all, and so adjustable desks and chairs were made. These chairs, however, are so hard to adjust that the ordinary woman teacher is not equal to the task, even if she thinks of undertaking it; and frequently no attempt is made to fit them to the height of the child. I have been told by teachers that they have taught in schoolrooms for months before they knew that the chairs and desks were adjustable, and that they had never seen any attempt made to regulate their height. If parents would insist upon the proper adjustment of desks, round shoulders would be much less common among children.

Another cause of round shoulders is the heavy bag of books which is carried to and from school, many of the books not used daily. With a little attention on the part of teacher and parents, the number of books used could be decreased or duplicate books for home use could be supplied.

In adults, faulty posture comes frequently from deliberately carrying the body improperly, because of fashion; to accommodating the body to clothes which are fashionable at the time; to sitting, standing, and walking incorrectly; and to wearing improper corsets and shoes. Postures assumed daily during work also, in many cases, change the shape of the body.

Results of improper posture. *One result of improper posture is fatigue.* The body is a delicately balanced mechanism. Any change in its balance which forces one group of muscles to support more weight than its antagonistic group, causes strain, and as all parts of the body are so closely related, no one part can be strained without affecting the whole. When the body is properly balanced, with each muscle working as it should, not only is less energy required for holding the position, but all changes from

the position are more easily made. In addition to this a correct posture allows the blood to circulate freely, and puts no undue pressure on the nerves. But when the body is improperly balanced, its work is done with constant strain and fatigue.

One case which came under my notice was that of a young woman, an enthusiastic art student, who suffered constantly from pain in her side and could not continue her studies because of excessive fatigue. She had been treated by first one, then another physician, and finally a doctor whom she consulted diagnosed her case as one of general ptosis or sinking of the abdominal organs. To verify his diagnosis, the physician sent her to have an X-ray taken of her digestive organs, and it was then that I saw her waiting to learn the result of her examination. I have never seen a more hopeless look on any one's face. When I suggested that the trouble might not prove to be as serious as she seemed to fear, she broke out with: "You don't understand a thing about it. I have not been well for two or three years, am tired all the time, am constipated, and constantly suffer from indigestion. Every one tells me it is nerves and advises me to get something useful to do, when I'm crazy to go on with my studies, and I'm just afraid that they will tell me again that there's nothing wrong. I *want* them to find something wrong, so that it can be cured and I *can* get well."

They did find something wrong; for the X-ray showed that her stomach and part of her large intestine were in the lowest part of her abdomen, instead of in the highest part, where they belonged. She was given no medicine at all, only rest and fattening food at first, and then later the proper exercises to return her organs to their proper position, — exercises that would correct her poise and strengthen her abdominal muscles so that the organs would be held in place. Later a second X-ray was taken which showed her stomach and intestines in normal position, and today she is a splendidly healthy woman, enthusiastic over her work, with no pain and only a normal amount of fatigue.

A second result of faulty use of the body is pain. Many cases of neuritis in different parts of the body are caused by improper poise and improper pressure upon muscles and nerves. For example, it is now believed that sciatica comes from a slight dislocation at the articulation of the lower part of the spinal column (the sacrum) and the pelvic bone, causing pressure on the sciatic nerve. The same trouble may cause lumbago. Many physicians believe that writer's cramp and other pains in the hands and arms are caused by improper positions or straining of the muscles and nerves of the arm and shoulder. Pain in the sides and abdomen is caused by the dragging down of the organs and the interference with perfect circulation. Frequently pain is caused through the menstrual period by pressure downward upon the organs or by strain upon the back due to improper posture.

A third common result of improper posture is constipation and indigestion. When the abdominal muscles are relaxed and the abdominal organs are sagging down and pressing upon each other, not only is the free circulation of blood prevented but there may be a mechanical interference with the passage of food from the stomach into the intestine. This, particularly in children, is frequently followed by indigestion, accompanied by nausea and vomiting recurring at regular intervals, and results in imperfect nourishment of the body. Interference with the free movement of the material in the large intestine is followed by constipation.

Two nurses whom I knew, both constipated, thin, nervous, and tired all the time, one hardly able to finish her training, the other a graduate nurse who felt that she must give up her position, were helped so much by being taught to use their bodies as they should that they continued their work with interest and vigor. Any one who has worked with these cases either as physician or gymnasium instructor could give numbers of cases where the beneficial results that follow a correction of the posture has been apparent.

The care of the feet. As foot troubles and incorrect use of the feet are frequently found associated with faulty posture and are

mentioned by some authorities as causes of faulty posture, it seems appropriate to include in this chapter something in regard to the feet and their care. There is no part of the body that becomes more out of shape from improper use and treatment than the foot, and great inconvenience, pain, and nervousness are often caused by foot troubles that could have been avoided with a little care.

The infant's foot is straight, almost what we call pigeon-toed. Each toe is as separate as the fingers. In walking, the foot is pressed well down, the toes grasp the floor, each muscle in the foot is working. Compare with this the foot of many adults, with the toes misshapen and overlapping; the big toe frequently forced under the other toes; the large joint swelled at the side; the arches flattened; and corns and calluses where there has been too great pressure from the shoe.

Flat foot is very uncomfortable, and in some cases there is the most severe pain. It is due to several causes: to improper shoes; to constantly standing on the feet, as in the case of nurses and policemen; to turning the toes out in walking, thus throwing the weight on the wrong part of the foot; to an excessive amount of weight; to jumping in games; to being on the feet too much after illness; and to a general condition of ill health and muscular weakness. It is a condition which can be helped, if not cured, by treatment. Leather supports are better than steel, but braces should be used only temporarily as a means of giving relief, while the muscles of the feet are being strengthened by exercises and stimulating baths. If the shoes worn are not of the correct shape, they must be changed.

Bunions are irritated joints which have been rubbed by shoes. They accompany a flattened anterior arch and a misplaced great toe which has been pushed out of the natural straight line by narrow, short shoes. Much can be done to relieve the pain in inflamed bunions by protecting them through the day with a plaster or with two or three layers of adhesive plaster with holes

cut in them large enough to encircle the joint, and by applying ichthyol salve (4 per cent) at night.

For acute pain in the anterior arch of the foot, a two-inch strip of adhesive plaster can be put around the foot just below the joints of the great and little toes and the foot. One end of the plaster should be fastened to the top of the foot near to but not quite in the middle; bring it down over the instep, under the foot, and up the other side of the foot, and fasten the second end near the first end but not quite meeting it. A plaster put on in this way forces the great toe slightly out towards the median line and gives support to the anterior arch. If the foot is to be used very much, put a second strip over the first one to give extra support.

CHAPTER TWELVE

EXERCISE AND EXERCISES

WE make a distinction between exercise and exercises in this way: Exercise is what we do in our daily life, — walking and running, working with the hands, and all the movements of life, — while exercises are regulated movements that are made to accomplish a special purpose, to develop a set of muscles or correct a deformity.

Exercise. Exercise begins at babyhood. The first thing a baby does is to cry and begin to kick his legs and arms; and as the days go on the baby grows, cries, and exercises his lungs, moves his arms, and kicks, and helps himself to develop and grow. Later he walks and runs and is constantly on the move. A growing child will run and walk as much as an adult and sometimes, we think, more. Frequently, in trying to follow and keep up with a child, an adult becomes fatigued while the child is still fresh. This exercise is necessary for the child, to help it to grow, to exercise its muscles, to make it breathe correctly, and to keep its blood circulating. As the boy and girl grow older, they begin to play games, running and throwing a ball, and engaging in exercise of all sorts. During the school days and college days, these exercises are kept up for both boys and girls, less distinction being made today than in former years, between the activities of the boy and of the girl.

When a girl leaves college there is still the same necessity for exercise, and the healthy girl should play tennis, golf, and other games, and, if possible, ride. She should systematically walk — rapidly, not loafing along — at least once a day. Many girls, upon leaving college, give up practically all outdoor life and unconsciously begin to allow their bodies to weaken from lack of use. Exercise should be taken daily in the fresh air. Indoor games, exercise in the gymnasium, or work in the house should never, except from the sheerest necessity, be substituted for outdoor exercise or sports.

Exercises. If one or more muscles are weak and the body has become deformed or weakened, a course of exercises aimed directly at the remedying of the defect should be taken. In this chapter no attempt will be made to give a set of exercises for the overcoming of certain bodily defects; for ordinarily exercises can be made to accomplish their purposes only when individual work is taken under the personal direction of an instructor. The purpose of the chapter is, rather, to emphasize the importance of corrective exercises for certain troubles and to explain why these are seldom carried out successfully in class exercises or by correspondence.

Difficulty of correcting defects by group exercises. In a large classroom, it is impossible for the teacher to give such direct individual attention as is necessary to correct a deformity. In giving an exercise to a class, the instructor gives that exercise exactly as it should be done, but if, through inattention or because of not realizing the importance of the technique of the exercise, the student is careless in her work, she will not get the development from the exercise that she should. Stooped shoulders or some slight fault in posture can be corrected perfectly in a large class, by paying attention to the details of the work; but the strictest attention is required, because when doing an exercise even a slight deviation from the proper position of arms, head, or other parts of the body will affect the work of a given muscle. For instance, in an exercise with the arms, if strict attention is not paid to the line upon which the arms are to be held, the muscles will not, in that exercise, be used as they were originally intended to be. When the deformity is such that more complex exercises are required for its correction, even the attentive student is likely to make some error in carrying out the details of the exercise, and the assistance of the instructor is a necessity.

Why taking exercises by correspondence is unsatisfactory. Taking exercises by correspondence is unsatisfactory because of the difficulty of following out correctly the technique of an exercise that has not been seen. I have known persons who have worked

for months trying to correct some particular weakness by taking exercises obtained through a correspondence course and who, at the end of that time, found themselves in the same condition as when they began, or worse. After these persons had used the same exercises under an instructor, they were able to develop the weakened muscles. If one attempts to use exercises without the personal help of a teacher, she should do them in front of a mirror. Here she should study out slowly and in detail each movement, and, after mastering the technique, continue to use the mirror. In this way she may, to a certain extent, overcome the handicap of working alone; but it is the very exceptional student who can work satisfactorily in this way.

Danger of continuing an exercise too long. Another reason for the competent oversight of corrective exercises is that, frequently, after a course of exercises directed to strengthen one muscle has been described and used during a certain period, the time comes when the exercise should be changed because that muscle has reached its normal development. The student working without guidance may not realize this and the exercise may be continued until the muscle becomes as much too strong as it had been too weak previously, and so another deformity may be started.

The use of braces in cases of defects. In some cases braces are absolutely necessary for shoulders, feet, or any part of the body that may be out of position. These braces should always be given by a physician who has studied this work thoroughly, and, except in extreme cases, they should never be used unless they are sometimes removed and exercises taken. They give support to the body, but they do not exercise the muscles; and a brace that is constantly worn (particularly under the arch of the foot) without the proper exercise, may cause a wasting away of the muscles whose movements they are hampering.

CHAPTER THIRTEEN

GENERAL HOME NURSING

WHILE certain cases of illness can best be cared for in the hospital, with all its equipment and appliances, and while in other cases the presence of a trained nurse is necessary if the patient is to receive proper care, yet there are occasions when neither the hospital nor the trained nurse is available, and the nursing must be done by members of the family, at home. It is of the greatest importance at such times to know how best to arrange for the comfort of the patient and to administer the treatment that the physician orders. Even when a trained nurse is employed, the more the members of the family understand of her work and its conditions, and the more they are able to do to help her, the greater is the patient's chance of a quick and satisfactory recovery.

In every family, moreover, emergencies arise when everything that any one in the family knows about illness will prove of value, and when these emergencies come there is no time to learn what is best to be done. The sick room is no place for guesswork or experiment, and unfortunately much of the volunteer services and advice received at these critical times is from the kind of experts who "might better not know so much than to know so many things that are not so." Experience without common sense and the right kind of information is worse than useless, and a girl will often find a sound training in the simple principles of nursing invaluable in her own home.

The place for the patient. The first matter to be decided in any case of illness is the room in which the patient is to stay. Sometimes, of course, it is necessary to use the patient's own room, but it may be possible to choose another which can be cleared of unnecessary furniture with comparatively little trouble and which will be more desirable. The room should be large and easily ventilated, and if possible should be on a floor with a bathroom. It should be in as quiet a part of the house as can be chosen, and if it contains a fireplace it will be all the better.



FIG. 41. When the sick room is arranged, everything not needed in it should be cleared out at once.

The open fire not only gives better ventilation, but affords an easy means of destroying waste, whether infectious or not.

The walls of the room chosen for the patient should be plain in effect, and certainly not covered with large-flowered or gayly decorated paper. Any one who has been ill in a room with flowered paper is likely to remember the weary hours spent in counting the figures and following the pattern in spite of oneself. Plain plaster or calcimine finish in a soft color is good, and next best is a plain paper or one with a figure so small that it gives the effect of plain paper. If one must prepare walls inexpensively and quickly, the glaring white of a whitewashed wall can be avoided by mixing a little tinting matter such as ocher with the whitewash to make a soft buff or other color. Pictures and ornaments should be either removed altogether or chosen with the absolute certainty that they will not worry the patient. In delirium, pictures and ornaments often seem to take peculiar forms and increase the excitement. Even a very beautiful picture becomes tiresome and irritating to a nervous invalid, when looked at day after day.

A dark room, unless absolutely required by the physician's orders, is not best, especially in the case of a nervous patient. If

the bed does not face the window, the shades and windows may be left open, and if the light is too bright, the eyes may be shielded by a screen. The bed should always be placed so that the patient will not face the light. It often serves to increase delirium to have the light shining constantly in one's face. Even when a shade is drawn, the little crack of light shining through beside or under it is tiring to the eyes.

In a long illness, the position of the bed may occasionally be changed, and also the position of the furniture. A small change in the arrangement of a sick room is an event. Monotony may be prevented by changing the pictures and ornaments now and then, and a growing plant is a source of interest as it blossoms from day to day.

The one great fact in the psychology of the sick room is that for the time being the patient, like a child, finds little things most important. The wise nurse will avoid "nagging" the patient by asking unnecessary questions or making comments, but will quietly make some little change now and then without remark, and see to it that there is some occupation for the patient's attention aside from watching the sun crawl along the carpet. When the sick room is arranged, if everything not needed is cleared out of it at once, it will not only make the care of the patient much easier but will avoid the fatigue which comes of watching some one day after day in the same round of "tidying up."

Keeping records and charts. Records should be kept from the beginning of an illness. It is really a simple task. All instrument dealers, and many drug-store proprietors, keep on sale record blanks and temperature charts. Temperature charts are easy to read and simple to keep. They are marked exactly as are thermometers, so that any one who can read a thermometer can keep a chart. On the record should be noted not only the temperature, pulse, and respiration, but the amount of sleep, the amount of food taken, the excretions, their number and description, and many other facts which enable the doctor to keep up with

BEDSIDE NOTES

Name _____ Rank _____ Co. _____ Regt. or Staff Corps _____

[illegible]

FIG. 42. Form for bedside notes used in United States Army hospitals. The temperature, pulse, and respiration are shown by graphs on another sheet (see page 167).

the case. The more accurate and detailed his information, the more certainly he will be able to judge of the demands of the case. A physician sometimes finds after days of fever that the temperature has been recorded, if recorded at all, on little, undated scraps of paper, and if he cannot know on what day of the disease the temperature has been taken it seriously interferes with his interpretation of the symptoms.

The doctor's orders. Always carry out the doctor's orders absolutely. If an order is not clearly understood, ask the doctor to explain it before he leaves the house. Any physician would rather be asked two or three times for further explanation, than to come back and find that his orders have not been carried out because they have not been understood. It occasionally happens that the physician or nurse in charge of a case, in leaving the untrained home nurse in charge, takes it for granted that she knows something she does not know, or that she is capable of dealing with certain situations with which she has had no experience. In that case the home nurse should ask questions, and make sure that she thoroughly understands the matter before she takes the responsibility. Any trained worker is only too glad under such circumstances to explain to a willing but inexperienced helper.

Regularity in giving food and medicines. Food and medicines must be prepared and given exactly when ordered. Medicines must be measured accurately, and be ready on the moment. Food must be ready to serve at the time when it is to be given, and even a little before. Delay in giving a medicine, or fifteen or twenty minutes' delay in a meal, has been known to cause serious loss to the patient through weakness. Amateur nurses sometimes wait to begin their preparations until the hour of the meal, and even remark that they must go down and see about the patient's tray, leaving the patient to wait, as it seems, an indefinitely long time for the food. In preparing food, the nurse should have her mind made up early what she will give at the next meal, and how

long it will take to prepare it, and all the essentials should be got ready beforehand. She should know how long the immediate preparation will take, and begin in time, — not wait until ten or fifteen minutes before the hour to begin, and try to make up the time by hurrying.

Care of the sick room. In the case of an infectious disease, all wastes that can be burned should be so destroyed in the fireplace, if there is one. In sweeping the room, dust should be avoided as far as possible. The floor can be wiped with a floor mop, and the furniture with a lightly oiled cloth. Everything that is soiled should be removed and cleaned at the earliest practicable moment.

Watching and measuring the excreta. Watch the urine and bowel discharges, and all expectorations or other excretions. Urine should be measured, and no bed pan should be emptied without thorough examination. The physician is often warned of some trouble from the condition of the urine or feces. If, when emptying a bed pan, there is anything unusual in the appearance of the contents, they should be saved and shown to the physician. It is better to save specimens unnecessarily several times, than to throw out one which might have indicated danger. In some diseases, particularly typhoid fever, hemorrhage will show in the excretions of the bowels. The untrained eye may fail to recognize blood in this case, because when it comes from high in the intestine it is brown and not red, but the trained physician recognizes it at once.

Etiquette of the sick room. Never whisper in the room of a patient. If anything must be said which is not to be heard there, go quite away. Nothing is more exciting or annoying than the sound of whispering to a nervous patient. She imagines that she is dying, that some secret is kept from her, that things are going on in the family which she is not to know, and even when she really knows that nothing is the matter she cannot help these worrying fancies. If it is necessary to talk in the sick room, speak so that the patient can hear easily. Of course, if she is sleeping, you will

not speak in the room at all. Do not whisper outside the door or in the hall. Go quite away to do any talking that must be done.

If it is necessary to make a report to the physician, go out of the room to do so. It is an excellent plan to make a habit of following the physician to the door, whether there is anything to report or not, so that the patient, being accustomed to this as a part of the routine, will not become uneasy when there really is reason for consultation. Some doctors arrange to have the nurse go out of the room with them at each visit, when often all that is said will be: "Anything new today?" "No, nothing, Doctor." "All right." This gives the opportunity for any necessary report and instructions without making anything unusual of it.

Cheerfulness in the sick room. A cheerful manner and face — not determinedly hilarious, but serene and unworried — will be of great help to the patient's courage in fighting against the illness. The nurse should also take care that those who are allowed to visit the patient do not stay too long or become tiresome. Care must often be taken that those who visit the sick room do not tell stories of similar illnesses. The things which are done in this way seem almost incredible. In one household where my patient was suffering from a mild case of typhoid, I was relieved by a nurse of experience. Every afternoon after my period of rest I found the patient worse, either terribly excited or so depressed, mentally and physically, that it was some time before I could restore her to the condition in which I left her. I was certain that something which took place in my absence caused the change, but neither the physician nor I could find out what it was. At last I suggested that I should take the entire charge of the case, getting what sleep I could while my patient slept. This change having been made, there was a steady improvement, with no further trouble during the afternoon. When the patient was convalescent she told me that the "nurse" relieving me had told her many tales of people who had become permanently insane from the effects of typhoid fever, and described to her graphically the

deathbed scenes which she had witnessed in her experience with this disease!

Another case in my experience was that of a young mother who, after losing her baby at birth and practically reaching convalescence, began suddenly to run such a high temperature that typhoid fever was feared. I was put in charge of the case, with orders to admit no one else into the sick room. After a few days of quiet and care the temperature went down. During this time she was constantly asking whether it was her fault that her baby did not live, whether it was true that she would never have a baby that would live, and other similar questions. At last she explained that two or three of her visitors had told her such dreadful things that she could not get them out of her head, and in her bodily weakness this rise of temperature had been the result.

In another case, where there was persistent, unexplained pain, and a secret fear of cancer, the patient had heard from one person admitted to her room tales of many cancer cases occurring after just such pain as hers and just such difficulty as the doctor was having in the study of the case. Many otherwise intelligent persons seem to take delight in telling such tales, especially when they can pour them into the ears of patients suffering from ailments similar to those of which they have heard. Any doctor will support the nurse in turning such visitors out of the room.

CHAPTER FOURTEEN

TEMPERATURE, PULSE, AND RESPIRATION

DURING illness the production and control of the body heat, the beating of the heart, and the respiration are usually disturbed, and often in a case of sickness much information as to the nature or progress of the disease can be gained by watching its effects on these fundamental processes of the body. It is necessary, therefore, in almost all cases of illness, to take the temperature and count the pulse and respiration, and the amateur nurse must understand just how this is done.

Taking the temperature. For taking the temperature, we use what we call the clinical thermometer. This thermometer is made slender and small, so that the temperature can be taken under the tongue and in other parts of the body. Before using the thermometer, we must make sure that the mercury in it is properly settled; for when the mercury is once up in a clinical thermometer, it will not come down of itself as it does in an ordinary thermometer. The best way to shake the mercury down is to take hold of the upper end of the thermometer and give it a quick, jerking swing. The temperature is registered in from one to five minutes, depending upon the place in which it is taken.



FIG. 43. Shaking down a clinical thermometer.

The usual places for taking the temperature are (1) under the

tongue, the tongue being held well down and the lips closed; (2) under the arm, in the groin, or in some fold of the body; or (3), in the case of infants or delirious patients, in the rectum. In taking the temperature in the mouth, which is the most usual way, we must be careful to see that the mouth is not too dry and that the patient has not just taken either hot or cold fluids. If the mouth is dry or hot, it is well to rinse it out and wait for ten minutes before inserting the thermometer. In taking the temperature under the arm, we must be sure that the armpit is dry and that the thermometer lies between the folds of the skin, not touching the garment, and also that the arm is placed close against the side of the body. In taking it in the rectum, the thermometer should be oiled; and, of course, a thermometer kept especially for the purpose should be used in taking the rectal temperature.

Differences in the temperature of different parts of the body. The temperatures of the different parts of the body are not exactly the same. The axillary or armpit temperature is $\frac{1}{2}^{\circ}$ lower than that of the mouth, and as the thermometer records more slowly under the arm it should be kept there from five to ten minutes. The rectal temperature is $\frac{1}{2}^{\circ}$ higher than the mouth temperature. In interpreting the record on a temperature chart, we understand that a mouth temperature has been taken unless the contrary is indicated. If it has been taken either in the axilla or the rectum, that fact must be noted on the chart. If such an entry should be made and not properly indicated, the chart would not be accurate, as the temperature would be either higher or lower than it would have been if taken in the mouth, and the reader of the chart would have no sure guide as to its exact meaning.

Variations in temperature. The normal temperature is 98.4° F.; 96.5° to 98° is subnormal; 96.5° indicates collapse; subfebrile is 99.5° to 100.5° ; moderate fever is indicated by 100.5° to 100.7° in the morning and 102° to 103° in the evening; high fever, 102° to 104° in the morning and 104° to 105° in the evening; 105° to 110° means intense fever.

For mild cases of fever it is customary to take the temperature twice daily at intervals of from ten to twelve hours. That is, if it has been taken at 8 A.M. it should be taken again at 8 P.M. The temperature is lower in the morning than in the evening.

Accuracy in taking temperatures. We must be absolutely sure that we take the temperature accurately. If it varies greatly from the last time, the thermometer should be shaken down and the temperature taken again. Any sudden change in the midst of an illness is an indication of trouble and should be reported immediately.

Fever above 105° , if long continued, will leave the patient in a critical condition. Occasionally the temperature may run up excessively high, as in a sunstroke, and sometimes in fever or nervousness, and the patient still live; but if such temperature continues long, death will be the result.

Excessively low temperature usually indicates heart weakness, and sometimes this condition continues for weeks in cases of chronic heart or kidney diseases. Under all other circumstances a low temperature should be considered as indicating collapse, particularly when coming in the midst of an attack of typhoid fever or other acute disease.

End of fever. Fever ends in two ways, by *crisis* and by *lysis*. Crisis means a sudden change, and lysis a slow change. For instance, in typhoid fever we say that the temperature ends by lysis. This is a gradual trend of the temperature downward. It continues to range much higher in the evening than in the morning, but at the same time each day's record of temperature is lower than that of the day before. Pneumonia is an example of a fever that usually ends by crisis; after the seventh or ninth day, the temperature may drop from 103° or 104° to 97° or 98° (page 174). Although this is the normal way for pneumonia to end, the patient must be carefully watched and, when the temperature suddenly drops, stimulated with heat or medicine to prevent heart failure.

The pulse. The pulse indicates the rapidity of the heart beat, and the physician or nurse can learn a great deal by feeling it. The inexperienced person, however, is able to judge only of the rapidity or the slowness, and the strength or the weakness, of the beat. The normal pulse in a man is from 60 to 70 beats a minute; in a woman, from 65 to 80 beats; and in a child, from 90 to 100 beats. But there are many individuals whose pulse rate will fall outside these limits.

Methods of taking the pulse. The pulse is taken by placing the finger ends along the course of an artery near the surface of the body and counting the beats for one minute. For a person of little experience it is best to take the pulse twice and to take it two minutes, to insure greater accuracy. It is generally taken at the wrist, from the artery which comes near the surface there on the thumb side; but it can be taken wherever it is possible to feel an artery — for example, at either side of the throat, on the artery in front of the ear, on the side of the chin, or on the inner side of the ankle. In giving an anæsthetic, it is customary for the anæsthetizer to keep his finger on the artery in front of the ear, that he may detect instantly a change in the heart beat.

In taking the pulse the thumb is never used. There is an artery in it near the surface, and the nurse may count the pulse in this instead of in the wrist of the patient.

Variations in the pulse rate. The pulse rate varies according to age; the old have a much slower pulse than the young. A sudden movement will change the rates, particularly if there is any weakness in the body. So, in taking the pulse of a sick person, if it is excessively high, we must always consider whether the patient has been quiet or whether there has been any sudden movement. Excitement will increase the heart beat; so will going up steps or going fast on a level. It is more rapid when one is standing than when one is lying.

There are many other facts that have to be noticed concerning the pulse besides its rapidity. Among these may be mentioned

its rhythm — whether it is regular or irregular in force and frequency; whether it is intermittent, missing a beat now and then; or whether it is large and bounding or small and feeble. One must observe also the condition of the radial artery — whether it is compressible as it is in the normal condition, or hard as it is when the blood pressure is high.

Respiration. The normal respiration is from 18 to 24 breaths per minute. It is very hard to get the normal respiration when the patient is conscious that it is being taken, because the respiratory movements are voluntary as well as involuntary and their rhythm can be changed at will. A nervous or hysterical patient will either decrease or increase her respiration if she is conscious that it is being taken. For this reason the nurse has to resort to many tricks to make sure that the normal breathing rate has been recovered. The custom is to lay the arm across the chest and, on the pretense of counting the pulse, first take the respiration.

Sometimes it is necessary to finish taking the temperature and pulse and count the respiration when the patient is not conscious of your watching her. The facts to be noted about respiration are its rapidity, its regularity or irregularity, whether it is labored or easy, whether it is deep or shallow, and whether the chest expands normally with each breath.

Relation of temperature, pulse, and respiration. Temperature, pulse, and respiration have a normal relation which usually holds in both health and sickness. That is, with the increase of fever, there is likely to be increase in pulse and respiration. This is not true in all diseases. For example, in typhoid fever, though the temperature may be high, the pulse will continue slow until the patient is weakened by the illness. Then, though the temperature may be decreasing, the pulse and respiration become more rapid.

CHAPTER FIFTEEN

BED MAKING



FIG. 44. After pulling the sheet until it is tight over the end of the mattress, lay it smoothly along the side.

BED MAKING as it is done in hospitals is a science, but to the inexperienced it seems far more difficult than it is. Like many other important accomplishments, it is a matter of knowing how to do a certain few things on which depends the success of the work. To make a bed quickly, permanently, and comfortably is indispensable to good nursing, and any one can learn how it is done.

The inexperienced nurse worries over having to change a bed with her patient in it, postpones it until the last minute, and later, after a little instruction and practice, finds it so simple that she looks back with surprise at her fears.

Learning to make a bed. It is well to practice first with an empty bed, learning to fold and slip the sheets smoothly; then, for practice in turning and lifting a patient, let a child, or an adult who is well, take the place upon the bed.

The first step in making a bed is to have ready everything that is to be used. Sheets should be aired, and, in winter, warmed; and of course they should be thoroughly dried. Plan the work before beginning, and have all the various steps in mind so that there will be no delay or awkwardness after the work is begun. It may be a good plan to make out a list of all the movements from beginning to end, and use this list until the order of procedure is thoroughly learned. Nothing tires a nervous patient more than the awkwardness due to half-formed plans or the delays caused by going for forgotten articles.

Making up an empty bed.

Take everything off the bed and turn the mattress. Put the blanket, rubber sheet, mattress pad, or whatever is used to protect the mattress, in place and see that it lies perfectly straight and without wrinkles. The bottom sheet should then be put on tight and straight, stretched well over the bed, and tucked in at the sides



FIG. 45. Tuck the lower part well under the mattress.

and corners. An excellent method of arranging the corners is that sometimes called the "envelope corner." It is neat in appearance and holds the sheet firmly in place. The lower sheet is placed on the bed and the corners secured in the following way:

(1) Spread the sheet straight upon the bed. If not straight it will pull into wrinkles and not be firm.

(2) Tuck the sheet well under the mattress at the top.

(3) Then, catching hold of it at the side, pull the folded under part of the sheet firmly toward you until it is smooth and straight under the mattress.

(4) Take hold of that part of the sheet which is a continuation of the part covering the end of the mattress, and after pulling the sheet until it is tight over the end of the mattress, lay it smoothly along the side. The part of the sheet lying against the side of the mattress should be a direct continuation of the part covering the end of the mattress.

(5) Tuck the part of the sheet which falls below this well under the mattress.

(6) Still holding the sheet firmly against the side of the mattress, bring the part above over and tuck it under the mattress. If



FIG. 46. Still holding the sheet firmly against the side of the mattress, bring the part above over and tuck it under the mattress.

correctly and smoothly done, the sheet should form a diagonal fold at the corner of the mattress.

(7) After folding and tucking in the two ends of the sheet in this way, push the sides of the sheets under as far as they will go. The farther under the mattress the sheet is, the less likely it is to wrinkle.

The top sheet is put on in a similar way, but with the wrong side up, so that the hem when turned over will

be right side out; the broad hem in both sheets is of course at the top. The top sheet is pulled down well at the foot, and not tucked in at the side as far as the upper sheet, so that opening the bed will not loosen the lower sheet.

Rubber sheets and draw sheets. Rubber and draw sheets are used for a bed patient. For ordinary cases a small rubber sheet is sufficient. This goes over the linen sheet, and must extend from at least the waist line of the patient down almost to her feet and be wide enough to tuck well under the mattress at the sides. It is not a good plan to pin the rubber sheet to the mattress with safety pins, as the weight and movements of the patient are apt to tear it at the places where it is pinned.

For a case of typhoid fever, or where there is inability to retain urine or feces, it is better to have a rubber sheet over the whole mattress, as well as the narrow one over the bottom sheet. Large rubber sheets are made, with reinforced holes at the sides and ends into which tapes can be run and the sheet fastened to the frame of the bed.



FIG. 47. If the work is correctly and smoothly done, the sheet should form a diagonal fold at the corner of the mattress.

The draw sheet is drawn crosswise on the bed over the small rubber sheet. It should be wide enough completely to cover the small rubber one, and is useful (1) to cover the rubber sheet; (2) to protect the bottom sheet in the part where it is most likely to be soiled; (3) because it is easy to change; (4) because it is easier to wash than the large sheet; (5) because it can be easily and quickly tightened and smoothed under the patient.

Changing the sheets with the patient in the bed. There are several methods of changing the sheets on the bed while the patient is lying in it. The method to be used in any given case depends upon the condition of the patient and the preference of the nurse. The following is a satisfactory way, when the patient can be turned :

(1) Put her on her side, with her back toward you.

(2) Remove the heavy top covers, leaving in winter just enough light blankets or comfortables to keep your patient from being chilled.

(3) Loosen the bottom sheet at the side from which you work, at both the foot and the head of the bed. Then either lay it in folds or gather it loosely together, and push it up close to the patient.



FIG. 48. Push both the soiled sheet and the folds of the clean sheet close to the back of the patient and turn her over to the side of the bed covered with the clean sheet.

(4) On a couch or table (not on the bed of your patient) lay the fresh sheet in long, smooth folds, leaving one side unfolded to be tucked under the edge of the mattress.

(5) Lay the fresh sheet on the mattress and tuck in the unfolded side the whole length of the bed.

(6) Push the folds of the sheet close to the back of the patient and turn the patient over with her face to the side of the bed covered by the clean sheet. Then go to the other side of the bed, where the soiled and the clean sheet will both be at the back of the patient.

The soiled sheet can then be easily removed and the

clean one drawn over, tucked in, and the corners secured. The draw and rubber sheets can be changed by the same method at the same time as the large sheet if necessary, by rolling them up with the soiled sheets and laying the clean draw and rubber sheets on top of the clean bottom sheet.

With a helpless patient it is easier to change either from the head or the foot of the bed. I have found working from the foot of the bed the best plan, as it is easier to reach it than the head of the bed, which is often against the wall. The patient is also much less disturbed in the first part of the preparation, when one works about the feet. In this case the steps are as follows:



FIG. 49. The soiled sheet and the clean sheet will be found at the back of the patient.

(1) Loosen the bottom sheet as before and push it up from the bottom.

(2) Fold the clean sheet crosswise instead of lengthwise as before, and tuck it in at the foot of the bed. Be sure to leave enough length to reach well to the head of the bed.

(3) Lift the feet and push up both sheets; then lift the legs and work the sheets farther upward. If the patient is strong enough, bend her knees and let her help raise her buttocks.

(4) After this put your arm around her and raise her shoulders and head, pull the pillows out, and bring up the two sheets.

Remove the soiled one, replace the pillow, and lay your patient down.

(5) Tuck the top of the sheet under the mattress and fix the corners.

When changing from the head, this order is reversed. If a patient is unconscious and absolutely helpless, a second person should help; then, with one person on each side of the bed, the sheets can be drawn along and the patient lifted with little trouble to the nurse and much less fatigue to the patient.

To change the upper sheet, lay it over the top of the soiled sheet, and in winter over the top also of a small blanket, taking care not to fan the air over the patient with the sheet. If the patient is not too weak to help, let her hold the top of the clean sheet as you slip the other from under it. If the patient is too weak to assist, tuck the corners of the clean sheet under her shoulders, then carefully remove the soiled one.

Lifting and moving a patient in bed. When lifting a patient to turn her pillow or to adjust the sheet or gown, stand on the right



FIG. 50. Changing the sheet from the bottom of the bed.



FIG. 51. Lifting a patient in the bed.

side of the bed and let her put her arms around your neck. Then put your left arm around and under her shoulder, leaving your right arm free for the work. To move her to the side of the bed, slip your arms under her shoulder and hips and draw her toward you.

Changing the nightgown. If the patient is to be kept in bed for a long time, it is much better to split the nightgown in the back. It is then easier to change, and as the patient does not lie on it, it is less quickly soiled. Also it makes one thing less to keep smooth under the back. If split to the neckband or yoke, it is easily put on, and is still held in place. When removing a nightgown, if it has not been split, draw the skirt of the gown well up from under the buttocks, draw one sleeve off, and lift the gown over the patient's head; then slip off the second sleeve. In putting on the fresh gown, the order is reversed: put one sleeve on, put the gown over the patient's head, put the second sleeve on, then pull the gown down under the patient. If the patient is weak, put your hand through the bottom of the sleeve and, catching hold of her hand, pull it through the sleeve.

Changing the mattress. A nurse should never attempt to change a mattress on which a patient is lying, without adequate help. The mattresses must be carefully held lest the patient have a fall; and this requires the aid of several persons. The easiest way to move a patient from one mattress to another is to lift her to one side of the mattress upon which she is lying, pull it half off the bed, put the fresh mattress on the uncovered half of the bed and close to the first mattress, and then draw the sheet on which the patient is lying over on the fresh mattress.

To turn the mattress over, pull it one half off the bed in the same way, place pillows on the empty side of the bed and move the patient over on to them; turn the mattress and move the patient back. This should not be done to a weak or nervous patient, as the fear of falling is much greater if pillows are used instead of mattresses.

Changing from one bed to another. This should not be undertaken without plenty of help. Each person should understand clearly, before beginning, the precise duties assigned to her and



FIG. 52. A chair used as a bed rest.

attend strictly to these. Failing to hold the beds steady or letting go of the patient might mean a fall and possible injury.

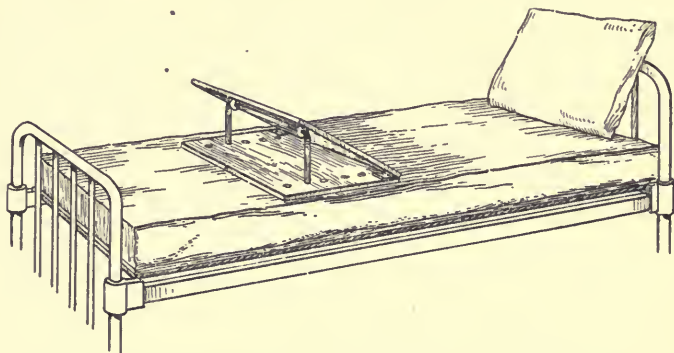


FIG. 53. A bed support to keep a patient from slipping down in bed.

If the beds are of even or almost even height, they should be placed together side by side. The patient is then moved to the edge of the mattress nearest the second bed, and the mattress on which the patient is lying is drawn partly off in the direction away from the second bed. The mattress of the second bed is then brought over until half of it rests on the first bed. The two beds must be held closely together and the mattresses firmly supported while this is being done. The patient is then drawn, on a sheet or strong bed pad, over on to the second mattress and slid back in place on the fresh bed. If this is done quietly and carefully, each one attending to her own task, there need be no strain or nervous excitement on the part of the patient.

If the beds are of unequal height and the patient must be lifted, place the beds side by side but with the head of one bed near the foot of the other, leaving a triangular space between the beds large enough to permit the nurses to turn around. Then the nurse, with two or three assistants, must go in between the beds, slip their hands and arms under the head and shoulders and back

and legs of the patient, lift her, and then turn around and lay her in the fresh bed.

Arranging pillows. Every person has some individual way of arranging pillows, and a nurse should learn to stick them up, flatten them down, or place them in whatever way the patient prefers them. Much can be done with small pillows to make the patient comfortable. Placing one under the abdomen when lying on the side will often relieve abdominal pain. Pillows under the knees, of different heights, will relieve the strain when lying on the back. A pillow under the feet, or between the feet and the foot of the bed, will keep the patient from slipping down in bed and will prove restful to her. Pillows may be put under elbows, under the hollow in the back, and in fact almost anywhere that support is needed. Sometimes, when a patient cannot turn, the nurse's hand can be run under one shoulder or side, the patient lifted slightly and a little pillow tucked under the side. A good nurse is one who not only knows how to give medicines and wait on the doctor, but who also remembers the little things that can be done to relieve the strain and nervousness of the patient.

Bed rests. Bed rests can be bought to support a patient who is sitting up in bed, but as a substitute a small, straight chair may be used. The chair is turned upside down on the bed, the back of the chair forming an incline to hold the pillows. One often slips down in bed, and this can be prevented by placing a pillow under

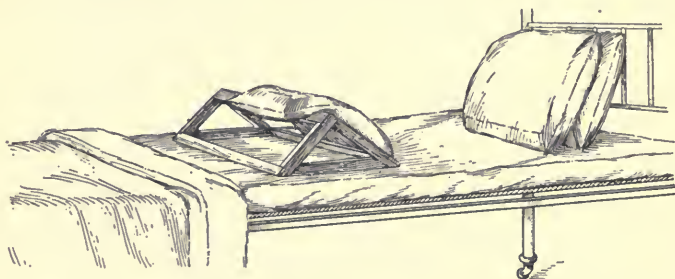


FIG. 54. Another type of bed support that can easily be made at home.

the knees. To keep this pillow from slipping, double it over a small rope or twisted sheet and tie the ends of the rope or sheet to the sides or top of the bed frame. Small bed supports resembling little seats can be made in two ways: (1) Two boards with edges beveled on one side are fastened together with hinges. Two iron supports swinging from the top and fitting into holes in each side of the lower board make it possible to adjust the seat (Fig. 53). (2) A frame to support the patient may be made as is shown in Figure 54. Either of these supports should be covered with a pillow when in use and must be tied with cords to the frame at the side, or, with a heavy patient, to the head of the bed.

CHAPTER SIXTEEN

BATHING A PATIENT IN BED

THE morning bath should be given each day about an hour after breakfast. While the patient rests after eating, the nurse should be preparing everything needed for the bath. In this, as in other matters connected with the care of the sick, no good nurse will ever be obliged to stop what she is doing in order to get something forgotten in the preparations. It is well for the inexperienced nurse to make out a list of what will be needed, and to refer to this until she is so accustomed to the work that the list is no longer required. In making out the list, put down the things to be done in the order in which they will be done; time yourself and see how quickly the preparations can be made.

Preparations for the bath. The following preparations should be made before the giving of the bath is begun:

(1) See to it that the temperature of the room is between 72° and 75° F.

(2) Put sheets to air, and, in winter, to warm.

(3) Put nightgown to warm.

(4) Have ready the following articles:

Two single blankets, warmed

1 face towel

2 or 3 bath towels

2 wash cloths

Soap

Grain alcohol

Tub or large bowl

Slop jar or pail

Low table, stool, or chair for bowl

Hot and cold water

Administering the bath. When everything is ready, put one blanket under the patient in the same way in which the lower sheet is changed. Put the second blanket over the patient and remove the nightgown. Begin by bathing the face and ears. Go

over the body in this order: face, ears, neck, arms, chest and abdomen, feet and legs; then turn the patient on her side and wash her back, and while she is in this position rub the back and shoulders with alcohol. Then turn the patient on her back again and wash the pubic region.

Be careful not to uncover at one time more of the body than is absolutely necessary. Wash, dry thoroughly, and cover each part before going on to the next. Don't be afraid to wet your patient, but at the same time be careful not to have the cloth so wet that it will drip over the blanket and towels. Use bath towels to keep the blankets dry, laying them between the part to be washed and the blankets. In cold weather, or if the patient is very sensitive to the air, the whole bath may be given under the blankets, protecting them above and below with the towels. The water in the bowl should be changed at least twice, — once after bathing the trunk, and again after bathing the feet and legs. If the patient is not too weak, put the hands and feet into the bowl, as this is very refreshing. For the feet, the bowl is set on the bed and steadied carefully, and the feet lifted and put into the bowl, one foot at a time. If the patient is able to help herself, use a foot tub and put in both feet. When using the tub on the bed, it is best to protect the bed with a rubber sheet covered with a bath towel.

Dry the patient carefully, grasping the towel firmly, so that it will not merely slip over the skin. Wipe thoroughly between the fingers and toes and in the folds of the body. If your patient seems tired after her bath, leave her between the blankets while you set the room in order; then remove the blankets and put on the nightgown.

It is well to have a regular order for the morning's work. At the same time, never lose sight of the fact that what you are doing is for the health and comfort of the patient. If she is tired or nervous, it is better to leave the combing of the hair or the cleaning of the teeth until later in the day. Do not insist on a fixed

routine regardless of her feelings or strength. If she is not really weakened, but merely peevish, a little tactful yielding on your part in things not essential often helps to carry your point in things which are essential.

Except when the patient is extremely ill, the hair should be combed daily. It should be divided into two parts and plaited at the sides of the head, high enough not to get under the ears when the patient is lying on her side. If the hair is thick and long and the patient tires easily, comb one half in the morning and the other half later. The mouth should be washed out and the teeth cleansed at least twice a day. If the patient is strong enough, even if not able to sit up, she should be able to clean her teeth quite comfortably by the use of a small toothbrush and a little kidney-shaped basin to hold under her chin. If she is not strong enough for this even with some assistance, the mouth must be washed out by the nurse. An orangewood stick wrapped in gauze or absorbent cotton can be used, but the cleaning is more thorough when done with the finger. Wash thoroughly the inside of the teeth and up well on the gums, and clean the tongue well, particularly if there is fever. A pleasant mouth wash is made of one-half glass of water, a teaspoonful of listerin, and a teaspoonful of glycerin. This wash keeps the tongue moist and is pleasant to the taste. If the tongue is much coated, use peroxid of hydrogen; it is cleansing and can be used undiluted.

Baths for therapeutic purposes. Many baths, such as cold and hot packs, cold sponge baths, alcohol baths, cold or tepid "bed tub" baths, cold sprays, and steam baths, are given in bed for therapeutic purposes. Cold packs are given either to quiet the nerves or to reduce fevers. For the pack usually given to quiet and induce sleep, the articles needed are:

2 blankets

2 sheets

A foot tub full of water 70° to 80° F. in temperature

A rubber sheet

Ice bag or gauze for compresses

Ice

A hot-water bag for the feet

Put the rubber sheet and one blanket under the patient. Wet the sheets thoroughly in the tub, then wring them dry enough not to drip, and put one sheet under and one over the patient, tucking them in about the legs and the arms and body. Fold the sides of the first blanket over the sheets and pin them together. Then cover all with the second blanket, tucking it well under the sides of the patient and around the feet. Put the ice bag to her head and the hot-water bag to her feet. If she shivers when first put into the sheets, the reaction will be better. She can be left in the pack for one or two hours and may fall asleep. When a pack is to be given to reduce fever, use only one blanket and keep the sheets wet by sprinkling them occasionally for fifteen minutes with the hand or a whisk broom.

Giving a tub bath in bed. A spray or tub bath can be given in bed with little fatigue to the patient. For this bath it is best to have two large rubber sheets. One is placed on the bed under the bottom sheet; the other over the bottom sheet, but under the patient. Stretch strong cords from the head to the foot of the bed on both sides at a height of a foot or a foot and a half above the mattress. Then bring the edges of the rubber sheet up over the cord on each side, fastening it securely with clothespins. At the head and foot of the bed, bring up the ends of the sheet and fasten them to the bed, or to the cords at the corners of the bed.

After the bath, the water may be dipped out and the rubber sheet dried with towels. Two nurses working together can carefully unfasten the bottom end of the rubber sheet from the cord, roll it into a funnel shape, and let the water run out into a tub or pail placed at the foot of the bed. After the patient has been dried, the rubber sheet should be removed from the bed.

Giving a sponge bath to reduce fever. Cold sponge baths are given to reduce fever. Place your patient between blankets.

Then with a soft sponge or wash cloth proceed as in a bath for cleansing purposes; only do not wipe the patient, but leave the parts of the body more uncovered and allow the water to dry by evaporation. The water used may be of the temperature of water as it ordinarily runs from the cold faucet, or if the patient's temperature is very high, ice may be added to make the water cold. If the patient is very nervous and objects seriously to the cold, do not insist on the use of ice in the water, for the nervousness and irritation of the patient will largely counteract the results which might be obtained from the iced water. The bath should continue for from fifteen minutes to half an hour. The strokes with the wash cloth should not be too heavy. They are generally up, but their direction makes little difference. Keep cold cloths or an ice bag on the head and, if necessary, a hot-water bottle at the feet. Your patient must never be allowed to have cold feet. The temperature of the patient is taken about half an hour after the bath, and will indicate the effect of the bath.

Salt rubs. Salt rubs are very easy to give and are valuable for their stimulating and strengthening effects. They can be given in two ways:

(1) Rub the body briskly with a handful of wet salt; then either spray off with cold water or take a quick cold tub bath.

(2) Dip a towel in a strong solution of salt and let it dry; then rub it briskly over the body.

The first method is the better, when the nurse is helping, as she can rub the back and parts of the body not easily touched by the patient. The second method is best when taking the bath alone. The two methods can be combined, using the salt towel for the back.

CHAPTER SEVENTEEN

METHODS OF GIVING VARIOUS TREATMENTS

THE most perplexing part of home nursing, to the untrained and inexperienced nurse, is the giving of various treatments. As she lacks the deft and ready touch which training and experience give the professional nurse, the simplest of these appears to her a complicated process. In addition to this, the physician not infrequently takes for granted knowledge which she does not possess, and she goes about the task of giving an enema, applying a compress or poultice, or some other common requirement of nursing, without being at all sure that she is doing it as it ought to be done. Most of these things are really very simple when a few special points are explained; and it is my object in this chapter to give such explanations as the average inexperienced nurse may need.

The enema and its purposes. Enemas are given for three purposes: as purgatives, for nutrition, and for administering medicine. The simple enema for purgative purposes is the most common; but it is often misused, as few people know how to administer it correctly. There seems to be a general idea that the higher the bag is hung, the more effectual the enema will be, and that a large quantity of water should be used. It is never necessary to give more than from one to two quarts of water unless by the orders of the physician. A large enema is not only unnecessary, but, given too frequently, it is injurious, as it distends the walls of the intestine more than is necessary, and if repeated continuously will weaken them and cause them to dilate.

The simple enema. A purgative or simple enema may be of water, soapsuds, or normal salt solution (a teaspoonful of salt to a pint of water). In the soapsuds enema only very pure soap should be used; castile soap is best. This enema causes a certain amount of irritation in the intestine, resulting in a movement of the bowels. The enema should be at a temperature of 105° F., as it must be either hotter or colder than the body to insure that it will be promptly expelled.

For giving an enema, a fountain syringe is the best. Unless a high enema is ordered, the rectal nozzle which comes with the bag is used; for a high enema a rectal tube which can be bought in any drug store is slipped on over the nozzle. The rectal tube is made of red rubber and can be bought in various sizes suitable to a child or an adult.

Giving the enema. Have ready a bed pan and toilet paper, and have the bed protected by a rubber sheet. Place the patient on the left side, with knees flexed and the right knee drawn higher than the left, as in this position the lower intestine is relaxed and the tube can be more easily inserted. Enemas are occasionally given with the patient lying on the back, with knees flexed, or in the knee chest position, in which the patient kneels, with chest against the bed and head turned sideways. The bag should be hung only from six inches to one foot above the patient, as hanging it higher causes pain in some cases, and also makes it difficult for the patient to retain the water. Oil the tube before inserting it, and let the water run through it until it is warm. If the rectal tube is used, it should be carefully and gently introduced from nine to twelve inches. This should give no pain to the patient.

Sometimes the tube will not go into the rectum, owing to an accumulation of feces in the lower bowel, a twist in the tube, or a failure to pass the tube around a fold in the intestine. In such a case, open the stopcock and allow a little water to flow through into the bowel. If, after this, it is still difficult to insert the tube, draw it well back and introduce it again, slowly and gently, and it will probably pass the obstruction. If the patient finds it difficult to retain the water until the full quantity is given, stop the flow until the contraction of the intestine has ceased; then continue the flow of water.

An enema should be retained from fifteen to twenty minutes, and then an effort made to expel it. It is not well to allow the patient to retain an enema indefinitely. If the feces are retained after they are softened by the water, poisonous matter may be absorbed

into the system. If the first enema is not expelled when it should be, give a small second enema, hanging the bag higher and allowing the water to enter with more force. If the patient is not too ill, getting up and walking around will often start the return flow. If the bowels are not evacuated after the second enema, massage of the abdomen, making pressure particularly over the left side, will frequently start the water.

The nutrient enema. For giving a nutrient enema, a piston syringe is generally used, but the enema can be given with a fountain syringe. Glass syringes are best, as they can be more easily cleaned. Rubber syringes are hard to clean, and as we cannot see into them we can never be sure that they are clean. A rectal tube is used, attached to the point of the syringe or to a funnel. The position of the patient is the same as directed in the other cases, except that in addition it is well to elevate the hips by placing a pillow under them. After the fluid has been inserted, if there is any inclination to expel it, press against the rectum with a towel. After the enema has been given, the patient is turned over on the right side and left with the hips elevated.

A nutrient enema must be as nearly as possible at the temperature of the patient. It should be prepared a little hotter than it is to be given, as there will be a certain amount of cooling in the passage through the tube. Lubricate the tube, fill the funnel or syringe, and then insert the tube. If a funnel is being used, open the stopcock, and watch the funnel to see that it does not become empty. Continue pouring steadily into the funnel until the prescribed quantity has been used. Since a nutrient enema must be given very slowly, the funnel should be raised only high enough above the patient's body to allow the fluid to run. If a syringe is used, the pressure on the piston must be very slow and steady. In case the patient complains and seems to have difficulty in retaining the fluid, stop and press a towel against the rectum, and continue the treatment when the intestine becomes quiet.

If the distress is great, it is much better to give only a part

of the enema and have it retained, than to persist in giving all and then have it rejected. After the liquid has been passed through the tube, wait a minute or two, then slowly remove the tube and apply pressure to the rectum. Turn the patient on the back or the right side, with hips elevated.

When a patient is fed for days by nutrient enemas, purgative enemas must be given at least once a day. Some part of the food nearly always remains unabsorbed, and this must be removed, as it will otherwise form gas in the intestine and make it impossible for the patient to retain the nutrient enema. Washing out the bowels at least once a day with soapsuds, salt water, or clear water, an hour before the time for a nutrient enema, will prevent its rejection and often make it possible for the patient to be nourished for a much longer time in this manner.

If the rejection of an enema occurs, do not conclude that it is impossible for the patient to retain another, but try to get at the reason for the failure. The enema may have been too hot or too cold, or may have been given too rapidly; or there may have been gas or feces in the bowels, or the time may have been too long since the giving of the last purgative enema.

Medicinal enemas. Medicines such as salts, glycerin, and turpentine are sometimes ordered as enemas. As these are intended to be returned immediately, they are given at the same temperature as the purgative enema, 105° F. Narcotics and stimulants and medicines of starch, oil, or other soothing substances are sometimes given by enema, and as these are to be retained, they are given by the same method as a nutrient enema.

Irrigating the bowels. An irrigation differs from an enema in that the water is thrown into the body and allowed to run out immediately. For giving an irrigation, use a fountain syringe, a rectal tube (page 122), a Y-shaped piece of tubing which may be either of glass or nickel, and a piece of flexible rubber tubing for the return flow. Connect the rectal tube with the stem of the Y-tube, the syringe with one fork, and the escape pipe with the

other fork. There should be a stopcock on both the tube connected with the bag and the escape tube. Hang the bag higher than when

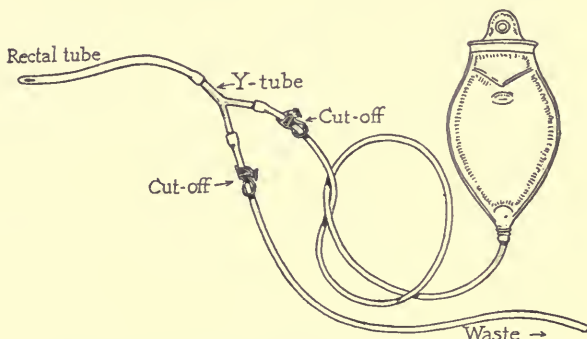


FIG. 55. The apparatus needed for irrigating the bowels.

giving an enema. Use the same care in running off the cold water, and in oiling and inserting the tube, as when giving an enema.

The clear water, salt water, or whatever prescription has been ordered by the physician, is prepared in a pitcher and carried to the bedside. It must be of a temperature from 110° to 112° F. Use from two to six quarts, according to the orders of the physician or the necessity of the patient, watching to see that the patient does not become too fatigued. After inserting the rectal tube, let about a quart run into the body, then close the stopcock connected with the bag and open the one connected with the waste tube, the end of which must rest in a bowl or slop jar. The water should run back from the body. As soon as this return flow stops, close the waste pipe and open the tube connected with the bag, and let in water until about a pint has been used, or until the patient is uncomfortable. Proceed in this way, allowing the water to run into and out of the body, until it returns clear. If when the waste pipe is opened the water does not return, the flow may be started by pushing the rectal tube in a little farther or withdrawing it a little bit. Sometimes the flow is checked by a slight bend of the

tube or by an obstruction that closes the mouth of it; moving the tube will usually remedy this.

Douches and their use. A douche is a stream of water directed against a part to cleanse it, to reduce congestion and inflammation in it, to check hemorrhage, or to stimulate the nervous system. Douches are of various kinds; for example, spinal, vaginal, nasal, throat, ear, and eye douches. They are given hot, cold, or medicated.

Spinal douches. The spinal douche is given to relieve nervousness and insomnia. It is usually given with a rubber spray attached to the faucet of the bathtub; but if you have not such a spray, a pitcher may be used and the water poured down the spine. Have the patient sit upon the edge of the bathtub, while you spray or pour water up and down the spine. At the same time rub her back briskly with your hand. Cold water is generally used for this treatment, but if the patient finds this too severe, warm or hot water may be used.

The vaginal douche. The vaginal douche is given with a fountain syringe having a point designed for that purpose. The temperature is from 110° to 112° F. for cleansing purposes, and from 118° to 120° for checking hemorrhage or allaying inflammation. Use from two to three quarts of water. The patient is placed on her back on a douche pan, and the bag is hung about two feet above the body. The air should be expelled from the tube before inserting it. The medicines generally used are normal salt solution, carbolic acid (1 part to 120 parts of water), boric acid (2 per cent), creolin (14 per cent), green soap ($1\frac{1}{4}$ per cent), or clear hot water. Douches are generally ordered by the physician, who also directs the medicine which should be used. Be careful that the bag is clean, and free from medicines used for enemas or other purposes. Wash it thoroughly with hot water, or better still, sterilize it by boiling before giving the douche.

Nasal douches. The nasal douche is used perhaps too freely, as the constant employment of a spray or douche frequently causes

irritation in the nasal region; but when suffering from a cold, one should clear the nostrils with a douche.

It is better for the amateur not to use a spray, for the spray forces the water back, and frequently carries with it germs from the throat into the Eustachian tube (page 53). A small syringe, like an ear syringe, which throws back a gentle stream, can be used. One way of douching the nose is to prepare the solution in a cup or glass, and to hold the glass under the nose and drink it up through the nose. Be very careful about blowing the nose after allowing the fluid to run into it. Closing one side of the nostril and blowing violently with the other frequently opens the Eustachian tube and forces mucus into the tube. Blow either into a pus pan or a handkerchief, without pressure against the nose.

If one nostril is closed with phlegm and the other open, syringe through the *closed* nostril, so that the fluid can escape through the open nostril. When the nose is sprayed or syringed through the open nostril, the fluid cannot escape and it lodges back of the nose, where it causes irritation and may be carried into the Eustachian tube. One of the most common causes of deafness is an irritation of this tube following an attack of grippe or cold, or brought on by the violent blowing of the nose. Try not to swallow while spraying, as in the act of swallowing, the mouth of the Eustachian tube is opened. Bend the head forward, keep the mouth open, and breathe through the mouth. To aid in breathing through the mouth, make the sound of *e-e-e-e-e*. If the water is too cold, and causes coughing, the syringing should be stopped.

Ear douches. Great care must be taken in syringing the ear. Prepare the solution at a temperature of from 100° to 105° F. and inject the water gently into the ear. A fountain syringe with the small nozzle attached is the best to use. The nozzle should be put at the edge of the ear and not forced in too far. Hold the syringe just high enough to allow the water to run, and let the water flow gently into the ear, a small basin being held close under it to catch the overflow. Dry the ear with absorbent cotton.

Eye douches. Never put medicine or drops in the eye unless ordered by the doctor, but washing with boric acid solution is permissible (page 71). Always wash the eye by movements directed away from the other eye. Nothing is more infectious than the discharge from an eye that is inflamed; the infection may be carried from one person to another, or from one eye to the other. Be careful (1) to hold the head so that the eye to be syringed is down, (2) to syringe away from the other eye, and (3) to catch the fluid in a piece of absorbent cotton. Never use the same piece of absorbent cotton for both eyes. After syringing the eye, wash the hands most carefully, and if the eye is infected use a disinfectant for the hands. For some reason, when working over an infected eye one often has an itching sensation in one's own eyes and a desire to put the hands to them. This impulse must be sternly repressed.

Counter-irritants. By a counter-irritant we mean anything, hot or cold, applied to the skin, which helps to draw the blood to the surface. One of the simplest counter-irritants in use is the hot-water bag. In using this, the water must be hot but not boiling. A bag filled with boiling water will sometimes burst and burn the patient badly. It is well not to fill the bag too full. Be sure that it does not leak and that the cork is perfectly tight. The bag, especially when applied to an unconscious patient, should be completely covered with flannel. Some persons, after an operation or when unconscious, have been burned with hot-water bags. In the majority of such cases it is the fault of an untrained assistant. Nurses in training are taught that when a hot-water bag is put beside an unconscious patient it must be wrapped carefully and in addition have at least one thickness of blanket between it and the patient. The air should be pressed out of a hot-water bag before using, as this makes it soft and not so likely to burst. In home nursing it is wise to have two or three hot-water bags for use in emergencies. If this is not possible, a hot brick or flatiron, or a bag of sand heated on a radiator or in a very moderate oven and

inclosed in flannel, can be used to supplement the hot-water bag and keep the feet warm when the rubber bag is needed for some other part of the body.

Poultices. Poultices are not used as much as they formerly were, and are not used at all for abscesses, as it is now believed that they keep the tissues warm and moist and make conditions favorable for the development of the germs. They are occasionally ordered in cases of pneumonia, or for the abdomen. They are usually made of flaxseed. The water must be boiling before the meal is added, and enough meal should be used to make the mixture thick enough to drop clean from the spoon. A teaspoonful of soda added to half a pint of water helps to make the poultice light. After mixing the materials for the poultice thoroughly over the fire, take them off and beat them until they are light. Be sure that the cloth is large enough to cover the poultice and fold it well over at the edges. The quantity of mixture to be put upon the cloth must depend upon the condition and part of the body to which the poultice is to be applied. For example, for an abdominal poultice it should be spread rather thin, particularly if there is excessive pain or inflammation in the abdominal walls or organs.

Be very careful not to apply a poultice hot enough to burn the patient, as it is easy to blister the skin in this way. Test the heat by laying the poultice against your cheek or a tender part of the arm. After laying the poultice on the body, cover it with oiled silk, folds of flannel, or a towel. When it becomes cool, take it off and cover with flannel the part where it was applied.

Digitalis poultices are made as follows: Take two ounces of the digitalis leaves to a pint of water, boil for fifteen minutes, strain out the leaves, and use the water for making a flaxseed poultice as directed above.

Mustard plasters are made, for adults, by mixing together one part of mustard to eight parts of flour and stirring this mixture in water. For children, one part of mustard to sixteen parts of flour is used. Mustard plasters should be left on from five to ten minutes

only, according to the amount of irritation needed and according to the sensitiveness of the skin of the patient. Ready-prepared mustard plasters are convenient. As they are very hot, the skin should be slightly oiled to prevent blistering; and after they are taken off, the skin must be washed.

Stupes. Cloths wrung out of hot water are called stupes. The water is frequently mixed with turpentine. Never make the mistake of sprinkling the turpentine on the flannel. It should be mixed with a little olive oil and then with the water. This keeps it from blistering the skin. In making a stupe, use a piece of flannel three times as large as the area of skin to be covered. This must be dipped in water so hot that it is impossible to wring out the flannel with the hands. It can be wrung out by placing it in the middle of a towel, dipping the towel in the water and wringing it out by holding the two ends of the towel; but if the stupes are to be continued for a long time, it is simpler to make a stupe wringer. This is done by taking a piece of unbleached muslin, with wide hems at the ends, and inserting a stick into each of these hems. The flannel is placed in the middle of the cloth, and the wringer is held by the sticks and twisted.

The doctor may order turpentine stupes to be applied for ten or fifteen minutes. By this he means that you are to change the stupes, removing one as it cools and putting on another, and continuing this for from ten to fifteen minutes. It is customary to vary turpentine stupes with those of plain water, as too much turpentine may blister. At the end of the ten or fifteen minutes the

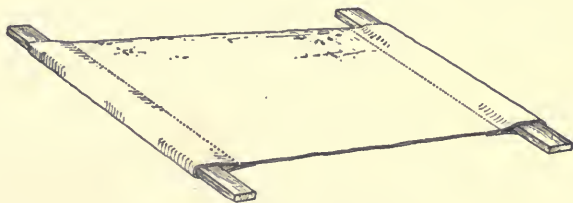


FIG. 56. A stupe wringer.

skin must be dried, and warm flannel or warm absorbent cotton laid over it. In putting on stupes the flannel is shaken out, laid in loose folds, and then covered with oiled muslin, a towel, or a piece of flannel.

Hot and cold compresses. Compresses are pieces of gauze, absorbent cotton, or old muslin, which have been wet in either hot or cold water. They are applied to any part of the body where there is acute inflammation. They are applied for fifteen minutes at intervals throughout the day, and must be changed frequently. Sometimes both hot and cold compresses are used, a cold compress being applied first, then hot and cold alternating for fifteen minutes. When applying compresses to an affected eye, use the same care for your patient and yourself that you do in douching the eye, never using the same compress on the two eyes and taking care not to touch your own eyes with your fingers. One general principle that applies to everything used for bandages, compresses, or poultices is that the cloths used must be clean.

CHAPTER EIGHTEEN

COMMUNICABLE DISEASES

FOR a long time a distinct line was drawn between contagious and infectious diseases. It was supposed that a contagious disease was communicated by direct contact, while an infectious disease was "in the air," and might be contracted without touching any person or article infected. These terms are now used interchangeably, and are considered to mean practically the same thing. Physicians prefer the word *communicable* as covering all classes of diseases in which the germs of the disease are carried from one person to another.

The germs of some diseases are transferred directly by contact, or on articles touched by infected hands; in other cases they travel indirectly through water, food, or air; and sometimes they are communicated through the bites of insects. Before the agency of the mosquito and other insects in the spread of infection was understood, the mysterious rapidity of the spread of such a disease as yellow fever and bubonic plague naturally led to the belief that the very air was poisoned; and until it was found that certain germs are conveyed in water, it was not understood how a single case of typhoid fever might cause an epidemic in a town miles away.

Channels of infection. There are four common channels through which the germs of communicable diseases enter the body:

(1) Through the alimentary tract, as in typhoid fever, dysentery, cholera, and sometimes tuberculosis.

(2) Through the respiratory passages, as in pneumonia, tuberculosis, diphtheria, influenza, measles, and scarlet fever.

(3) By direct inoculation from the bite of an insect which conveys the germ into the blood, as in malaria, yellow fever, and plague.

(4) Through cuts and wounds, as in tetanus (lockjaw), anthrax, and infection of wounds with pus-forming bacteria.

Public control of communicable diseases. In many cities and states the attending physician is required to report any case of communicable disease to the board of health. On the receipt of

this report an inspector is sent to the house, who inspects all the surroundings, including the patient's room. Inquiries are made into the system of disinfection and isolation used, and if the disease is considered infectious to a degree endangering the public, the house is posted. Thus the question of isolation for the purpose of controlling the germ is not left to the individual but is enforced by law. Nurses taking care of such cases are required to keep themselves separate from other persons. In some cities those living in the same house as a patient suffering from scarlet fever, diphtheria, or smallpox are forbidden to go into public buildings.

Supplementing such laws are laws controlling food distribution and supply. The health of those who handle milk and other food is investigated, and the source of the supplies inspected. Various means are taken to secure milk and other food free from infection, and thus prevent the spread of communicable diseases. Milk bottles are not allowed to be taken from a house where a communicable disease exists. The two important methods of preventing the spread of infections are to isolate the patient and to destroy by disinfection the germs that come from the patient.

Isolation. The most important measure in the control of communicable diseases is isolation, but to be effective this must be complete and must be continued until all danger of the patient giving the disease to others is past. When this time comes the patient should be bathed with a disinfectant, have the hair washed, and be provided with clean clothing before leaving the room. A diphtheria patient should be kept isolated until the cultures from the throat are returned negative. The period of isolation is prescribed by the physician in charge and by the board of health. A patient should not be allowed to come out of the room or mingle with the family until permission to do so has been definitely given.

Many persons are careless about traveling during convalescence. We should be sure, before entering trains and hotels, that there is absolutely no danger of carrying a disease. In one case a child convalescing from scarlet fever was taken in a Pullman car to a

summer resort. Extreme illness and even death resulted from the infection spread among the passengers, and the summer resort eventually had to be closed early in the season, to the serious financial loss of those depending on it for their income.

Disinfectants. Fire, hot water, and sunlight are three of the surest disinfectants that are usually available, but for some purposes these cannot be conveniently used and chemical disinfectants are employed. Some of these are better for one purpose and some for another. The following list includes those most commonly used and indicates the purposes for which each is most suitable:

Bichlorid of mercury, a common and easily obtained disinfectant, should not be used for disinfecting animal excreta; that is, it is not suitable for use in cases of typhoid fever or other diseases where the bowel discharges are to be disinfected, and it is not as good as some other disinfectants for use on the sputum of a consumptive. It is injurious to toilet bowls and pipes, and stains white clothing. It must not be used in a metal vessel. If used constantly, it may be injurious to the skin. It is useful for disinfecting glass, washing paint, or cleaning enameled ware.

Carbolic acid is the best general disinfectant to use in an infectious case. The proportion should be one part of the acid to thirty-nine parts of water. It should be made up with hot water and thoroughly dissolved in the water. It neither stains the clothes nor injures piping. The objections to it are that care must be taken in its preparation, as, if not thoroughly mixed, it may burn the skin; that if used too strong it may cause a feeling of numbness or produce sores; and that many persons object to its odor.

Disinfectants such as *cresol*, *lysol*, *creolin*, and other coal-tar derivatives are good, but may be more expensive than carbolic acid. *Formalin* is a solution of formaldehyde gas in water. It is non-poisonous and does not injure silk or wool, but it gives off a gas which is very irritating to the mucous membrane, and to which some persons are especially sensitive. It must be very carefully used, particularly in diseases where the throat and nose are affected.

Binioidid of mercury is twice as strong as bichlorid of mercury and is therefore used at half the strength. It can be used with metals and does not injure the hands.

Alcohol can be used as a quick disinfectant for the hands, but if used too often it will dry the cuticle and may cause fissures in the skin.

Listerin is a convenient disinfectant for the mouth, throat, and hands. It contains boric acid, alcohol, and other ingredients. For use in the mouth it should be diluted, using one part of listerin to two of water. For the hands it can be used pure.

It is always to be remembered that the germs of all our ordinary diseases are killed practically at once by boiling water, and that where they are not protected by something over them, strong sunlight is almost instantly fatal to them. Clothing can often be disinfected by boiling, more easily than in any other way, and chairs and other articles of furniture can be made safe by placing them in the sun. It should be understood, however, that light which has passed through glass has lost its disinfecting power.

Disinfection of rooms. In most cities the board of health takes charge of the disinfection of sick rooms after the patient is discharged from quarantine. Where the health authorities do not do this, and a member of the family wishes to disinfect a room with gas, she should first open all closet doors, close the fireplace, registers, and windows, and stop all cracks by pasting paper over them or stuffing raw cotton into them. The gas can be generated by placing a washtub in the center of the room and setting in it a galvanized-iron pail. Then put into the pail for each 1000 cubic feet of space of air in the room 250 grains (9 ounces) of potassium permanganate and pour over the permanganate for each 1000 cubic feet of space 500 cc. of formalin (40 per cent). Be ready to leave the room at once, as a great volume of formaldehyde gas will be immediately given off. Close the door through which you go out, paste paper over the cracks about it, and leave the room shut up for twenty-four hours. Then,

covering the nose and keeping the eyes closed, go directly to the windows and open them and allow the room to air for several hours before attempting to clean it. It is a good plan, in preparing the room, to push all furniture out of the way, leaving an unobstructed path to the window.

In some places formaldehyde gas is not considered efficacious, and the method used for disinfection is to wash the floors with a disinfectant solution and paint them, and where possible, to treat the walls of the room in the same way. Then leave the room open for several days to the sunlight and wind. It is well to use this last method, even when gas has been used, for it is more certain to achieve the desired results.

Contacts, mild cases, and healthy carriers of disease germs. When a disease of an infectious nature, such as diphtheria, measles, or scarlet fever, occurs in a school, all children who have come in contact with the child who is taken ill should be thoroughly examined by a physician; and if germs are found or if there is an indication of cold or sickness of any kind, the child should be kept from school until well. In very infectious diseases like measles, the child should be isolated even before the symptoms appear, for it is practically certain that the disease will develop.

Another problem in the control of communicable diseases is that of unrecognized cases of these diseases and of healthy carriers of virulent germs. It sometimes happens that an infectious disease takes a form so mild that a physician is not called, and the nature of the disease is not discovered. In such a case, of course, nothing is done to prevent the spread of the germs, and a person exposed to contagion by a mild case may have the disease in a violent form.

Disease germs may also be spread through persons called "carriers," or hosts of disease germs, who may either have had the disease themselves or may have been in close contact with some one who had it. After convalescence from some diseases the germs may remain in the body for months or years, and while the carrier

may seem to have recovered he may still give the disease to those who come in contact with him. In some persons the germs are so persistent that they cannot be destroyed by treatment. This is especially true of carriers of typhoid fever. Such persons should not be allowed to cook or distribute food to others, and should be strictly clean in all their habits, particularly in washing and disinfecting their hands after going to the toilet.

Still another class of carriers is found among healthy persons who have been in contact with those sick from certain infectious diseases. A considerable number of those who are in contact with diseases like diphtheria, meningitis, pneumonia, and poliomyelitis (infantile paralysis) carry the germs in their noses and throats, although they themselves show no indication of the disease. These carriers are the chief problem in the control of certain diseases, and if the disease is to be kept from spreading, they must be isolated until they are free from the germs. It is, therefore, necessary to give attention to other persons besides those who are actually ill of communicable diseases if we wish to hold these diseases in check.

Avoiding unnecessary exposure to disease. No one should be exposed to a communicable disease unnecessarily. It is not to be assumed that because the person suffering from the disease has it in a mild form, or because the person exposed is in excellent physical condition, the disease will be transmitted in a mild form. If enough germs are taken into the body to result in the disease, it may take a violent form, and previous good health may not prevent serious complications and even death. If called upon to nurse such a case, undertake it with courage and confidence and take all means to prevent contagion. But no one should unnecessarily court infection, because even if the disease is not contracted by the person exposed, the germs may be carried to others on the clothing or the hands. The fewer the number of persons exposed to a disease, the smaller the number of germ carriers and new cases there will be.

CHAPTER NINETEEN

NURSING COMMUNICABLE DISEASES

IN nursing non-communicable diseases, the nurse thinks only of the welfare of the patient. In nursing a communicable disease she has the double task of caring for the patient and of keeping the infection from spreading to herself and others. In this chapter I shall give some general instructions that apply in nursing cases of most communicable diseases, and in subsequent chapters shall discuss in more detail particular problems that arise in connection with some of the more important of these diseases. Since a large proportion of the illness that comes into the ordinary home is due to communicable diseases of one kind or another, a knowledge of them will prove most valuable to the amateur nurse in her home.

Making isolation effective. Isolation which is not complete is not really isolation, for a chain is no stronger than its weakest link. It is important, therefore, that in case of a communicable disease the room chosen for the sick room should be separated as far as possible from those used by other members of the family. When practicable, the best arrangement is two rooms and a bath on the top floor. It is most desirable that a bathroom should be reserved for the use of the patient and nurse, but of course, in a house where there is only one bathroom, this is out of the question. In such circumstances, the nurse should use every means in her power to avoid infecting the bathroom with the germs. She should not set a vessel on the floor of the bathroom, and should touch nothing in the room without disinfecting her hands. She may use a piece of soft paper between her hand and the faucets and chain. The room chosen for the patient should be easy to ventilate, and if possible should have a fireplace. The fireplace not only aids in ventilation, but affords a convenient way of destroying paper and pieces of linen or gauze which have been used in the care of the patient.

The nurse in charge of the case should not go into other parts of the house, or mingle with other members of the family. She

should stay in the sick room except when she leaves it for her daily walk. She should keep outside the room a complete suit of outdoor clothing, even to shoes, and change to this when going for her walk, and she should pass directly out without stopping to talk with members of the household.

The same precautions should be taken by any member of the family, or any friend, who may be called upon to relieve the person in charge of the case. The hair should be covered while in the sick room, and washed afterward, for safety. No letters should be sent from the sick room unless they are disinfected. After leaving the case the nurse should immediately disinfect herself and wash her hair, before entering street cars or stores.

Preparation of the sick room. Remove from the room all unnecessary rugs, ornaments, pictures, and books. Clean out the closets thoroughly and take out of them all unnecessary contents, especially woolen clothes and books. In selecting the furniture for the room, choose the most simple and the most easily disinfected. In many diseases, as in scarlet fever and diphtheria, it is necessary to wash off the beds with disinfectants. A brass bed is injured by water, while a wooden bed, or better still an iron bed, can be washed and thoroughly disinfected. The preparation of the room is often left to the members of the family, for by the time the nurse reaches a case the patient has frequently been in the room so long that it is impossible to remove the things left in it.

Disinfection during the disease. Floors and furniture in the sick room should be wiped with a damp cloth. Dishes used should be thoroughly disinfected before being taken from the room, and should be kept separate from those used by the family. All food left by the patient on the plates should be destroyed. If there is a fireplace in the room, the surplus food should be burned; if not, it should be left to stand in a disinfectant, after which it may be safely taken from the room. A wooden tub filled with disinfectant solution should be kept outside the door, where a maid or a member

of the family can get at it. Into this the nurse should put the dishes, which, after having stood in the solution for at least an hour, can be taken away by the maid. When this is done, the nurse does not have to touch them after they are disinfected.

The same means can be used in disinfecting clothes; or they may be wrapped in a sheet wet with a disinfecting solution, carried to the laundry, and boiled. Everything that touches the patient or the bed should be disinfected. The solution to use for clothes, except in a case of infantile paralysis, is carbolic acid (5 per cent) or formalin (10 per cent). The nurse's clothes also should be disinfected.

As it is no longer believed that the germs of such diseases as scarlet fever and diphtheria can be carried through the air or in dust, hanging a wet sheet over the door is not thought necessary. Infection is most commonly conveyed by direct contact with the patient or something touched by the patient, such as bedclothes or dishes. The nurse may convey infection in working over the patient, touching the body with her hands or clothes, or soiling them with excreta containing germs. But if the proper disinfecting of all infected matter has been done, and if the nurse has been properly careful in carrying excreta from the room, the furniture and rugs on the opposite side of the room from the patient will be only slightly infected, and the few germs existing will be destroyed by fresh air and sunshine.

Disinfecting excreta. All such excreta as stools, urine, and sputum should be disinfected. Sputum can be received in old linen, paper napkins, or paper cups, and burned. In a room where there is no fireplace and the cloths or cups must be carried out of the room to be burned, the nurse should wrap them in a newspaper. Some member of the family may receive the bundle from her, not touching it with the hands, but folding it in fresh paper, and carrying it down to be burned in the furnace or range.

Fecal discharges may be disinfected with 5 per cent carbolic acid, cresol (one part to four parts of water), formalin (10 per

cent), or chlorid of lime. The excreta should be thoroughly covered with the solution, the masses broken up, and the solution stirred into it, and should stand for at least an hour in a covered vessel. If the disinfectant is applied hot, it will penetrate more thoroughly.

Protection for the nurse. A nurse must invariably disinfect her hands after working with the patient, both for her own sake and to prevent the spread of germs through the room. She should keep ready a bowl containing a disinfectant, and after working over the patient or coming in contact with the bed or the person, should go at once, before touching anything else in the room, and disinfect her hands. When the disease is one of the throat or lungs, she should constantly use a gargle and mouth wash. If the disease is diphtheria, she should be given antitoxin, unless she has been tested and found immune to the disease;¹ if she is caring for a case of smallpox, she should be vaccinated; if the patient has typhoid fever, the nurse should be made immune by inoculation. She should eat nothing that has been standing in her own room, and should not eat in the room where the patient is. Before beginning to eat, she should wash out her mouth and throat, and bathe her hands, face, and arms in a disinfectant. In working over the patient she should not allow the breath of the sick person to come in her face. One of the great dangers in diphtheria is that

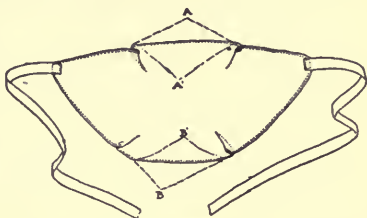


FIG. 57. A face mask worn in nursing cases of communicable respiratory diseases. It is made of three plies of finely woven gauze (bleached absorbent bandage gauze, thread count 44-40) which is known as "buttercloth." Such masks have proved very effective in preventing the spread of respiratory infections.

¹About 50 per cent of all persons are naturally immune to diphtheria, and by a test called the *Schick reaction* it is now possible to determine who is immune and who is not. The test consists in injecting with a hypodermic needle a very small amount of toxin into the skin. If the person is immune, a red spot appears around the point of injection.

the patient may cough in the face of the nurse while she is spraying or treating the throat or while she is leaning over the bed. At such times she should wear a mask of fine gauze.

Daily care of the patient. The patient should be bathed once or twice daily. Unless the skin is inflamed, alcohol may be added to the water. In cases where there is desquamation (scaling), as in scarlet fever and measles, it is well to rub the body with carbolated vaselin before the bath. The vaselin not only relieves the itching, but keeps the particles of skin from flying about. The mouth and tongue should be cleaned thoroughly twice a day, and oftener if there is excessive fever. A mouth wash of glycerin, boric acid, listerin, and water will help to keep fissures from forming on the tongue. Vaseline should be put on the lips if there is a tendency to dryness. The ears should be watched for discharge, and if there is discharge or any apparent deafness it should be reported to the doctor. Urine should be measured and its character noted. The back should be rubbed twice daily to prevent sores. The eyes should be shielded from the light and, if they become inflamed, should be washed out with a saturated solution of boric acid. The patient should not be left alone, for there is often great prostration and, in most communicable diseases, a danger of heart failure.

Complications. In all infectious diseases certain complications peculiar to the disease must be guarded against, and their prevention depends in the main upon careful nursing. Even in mild attacks, unflinching care and attention are needed. The nurse should keep her eyes constantly open for new symptoms and report every unusual condition to the physician. She should inform herself at the outset as to the complications most likely to occur, and the best means for preventing them. Sometimes the best efforts cannot keep these complications from developing, but in the majority of cases intelligent and faithful care will do the work. In later chapters some of the complications to be looked for in some important diseases will be pointed out.

CHAPTER TWENTY

SOME COMMON COMMUNICABLE DISEASES

THE object of this chapter is not to prescribe the treatment for various communicable diseases, enabling readers to care for their sick without the attendance of a physician, but rather to make clear the importance of calling a physician in such cases, and following his directions; and also to explain the reasons for these directions in such a way that they can be intelligently followed. It is far easier to avoid an evil if we understand its causes, the possibility of its occurrence, and the methods to be employed in its avoidance. For these reasons I am including a brief description of each disease discussed, the treatment usually employed, and the complications which may arise during its course. In some cases, especially in so-called children's diseases, what seems to be a trifling matter may have very serious consequences.

Measles. Measles is a much more serious disease than most persons consider it to be. Not only is it often followed by serious complications, but the percentage of deaths from this disease, particularly among children under six years of age, is quite large. Therefore the patient should be carefully watched and guarded against complications. Ear troubles, enlarged tonsils and adenoids, bronchitis and pneumonia, Bright's disease, occasionally heart trouble, arthritis (inflammation of the joints), paralysis, meningitis, dysentery, and brain abscesses are all complications of measles. The eyes are affected greatly, and should be guarded from the light during the course of the disease; and all reading should be forbidden until convalescence is well advanced. Tuberculosis also may follow measles; and because of the weakening effect that measles has upon the respiratory organs, the patient should be watched carefully for some months after he is apparently well.

A case of measles is infectious during its whole course, and is acutely so in the early stages before the disease is generally recognized. The germs are found in the secretions of the mouth, throat,

and eyes. The patient should be kept in bed, the room should be well ventilated and cool, and great care should be taken to guard against exposure and chilling. The incubation period of measles is about eight or nine days. The first symptoms resemble a cold, and the rash appears about four days later. Practically every one who has not had the disease contracts it on exposure, and to prevent infection it is necessary to isolate, before the symptoms actually appear, any one who is developing the disease.

German measles. German measles resembles both measles and scarlet fever. The rash is like that of measles, and the throat symptoms are like those of scarlet fever. It is a mild but highly infectious disease. There are seldom complications if ordinary care is taken.

Mumps. At first mumps may be mistaken for grippe. Early symptoms are usually fever and headache. The first symptom may be a sharp pain in the jaw when something sour has been eaten. In mumps, the gland in front of and below the ear (the parotid gland) is swelled, and when the pain and swelling both appear there can be no further doubt of the diagnosis. The incubation period is from two to three weeks. The patient is considered dangerous to others for about four weeks from the enlargement of the glands.

The patient should be kept in bed until the temperature is normal. Hot and cold compresses may be applied to the swelling, and cold baths given to decrease the fever. Children are not very ill, as a rule, but with adults the disease is often more serious. In either case, care should be taken to prevent complications.

Whooping cough. In cases of whooping cough in young infants it is necessary to guard against choking. During a severe paroxysm of coughing a direct current of fresh air in the face will often give relief. Children suffering from this disease should be kept out of doors except in damp weather, and should be kept absolutely away from other children. The clothes should be changed frequently and special attention given to cleanliness, as the

matter coughed up or vomited is full of the germs. Whenever possible in such diseases, the infected matter should be deposited on cloths that can be burned, or in pans. Bathing should be done carefully, and the child should be kept out of draughts and not allowed to become fatigued. Pneumonia sometimes comes on during an attack of this disease or during convalescence from it.

While the paroxysms of coughing are severe, it is best to keep the child in bed. If vomiting is persistent and occurs soon after food has been taken, the nourishment should be repeated after fifteen or twenty minutes. Otherwise the child may be weakened by lack of food. Water should be given freely. A close-fitting abdominal band is of great assistance to the patient. It supports the abdominal muscles during a fit of coughing and lessens the danger of hernia, which is the protrusion of a loop of the intestine through a rupture in the abdominal wall beneath the skin.

Isolation should be continued for at least five weeks, or until the constant whooping has ceased. A slight cough may continue for months, and there may be a tendency to "whoop" during a coughing or crying spell. In some places whooping cough is being treated successfully by inoculation, and in severe cases this treatment should be tried. The incubation period is usually from one to three weeks.

Scarlet fever. In scarlet fever any discharge from the ears, seeming deafness, or complaint of pain in the ears should be reported at once to the physician. In this and other infectious diseases the patient should be guarded against sudden movements, as sitting or standing up suddenly, because the heart is much weakened and an attack of heart failure is possible. The urine should also be measured and its character reported to the physician, as any complication affecting the kidneys may result in Bright's disease. This care should continue until well into convalescence. Nervousness and chorea are also complications to guard against in children suffering from scarlet fever.

A child who has scarlet fever should be carefully protected against a sudden chill, and kept in bed in a cool, airy room. The bowels should move regularly, and the patient should be kept on a liquid diet and encouraged to drink water freely. Cool sponge baths may be given when the fever is high or when there is delirium.

Diphtheria. Complications of diphtheria are heart failure, infection in the mastoid sinus, albumin in the urine, paralysis in various parts of the body, and acute diarrhea. Diphtheria nowadays is not the dreaded epidemic disease of fifteen or twenty years ago. With the use of antitoxin the after effects are far less serious than formerly, and the death rate of those attacked has fallen from 45 per cent to 10 per cent.

Antitoxin itself in all ordinary cases does practically no harm to the patient. Sometimes a little rash will appear on the body, near the point where the serum is injected, or temporary pain in the joints may follow its use; but these disadvantages are trifling in comparison with the beneficial effects of the serum. Diphtheria antitoxin, as well as other serums and vaccines, is manufactured under government control, and each lot is thoroughly tested before being used on human beings. They should be carefully administered to prevent infection from other sources, and given, of course, by a physician who understands their use. The size of the dose depends upon the seriousness of the disease. Large doses can be given without injury. The first dose of antitoxin given in an ordinary case of the disease is usually 6000 units, and this is repeated as often as necessary. In a serious case as much as 16,000 units is given at once, and as much as 100,000 units during the day is sometimes given to children. Antitoxin should, if needed, be given to the nurse also and to others who have come into close contact with the patient, as it will prevent the development of the disease in them (page 141). The diphtheria antitoxin does not, like the vaccine of smallpox, give immunity for years against the disease, but affords temporary help to the body by neutralizing the toxin produced by the germs.

Diphtheria is one of the diseases frequently spread by healthy carriers. These may be persons who, after recovering from the disease, still have active germs in their throat and nose; or they may be those who, having come in contact with some one having diphtheria, do not themselves develop the disease but yet are carriers of virulent germs. When a case of diphtheria is found in a school or home, cultures should be made from the throats of all who have come in contact with the patient, and all carriers of the germs should be isolated until the danger of conveying the disease is over. Recently it has been found that sores in the skin may be caused by the diphtheria bacillus, and that the germs may be spread from these sores as well as from the throat. Usually the incubation period is from one to three days, but it may be from a few hours to ten days or even more. The patient should be kept in quarantine until cultures show that the throat is free from germs.

Chicken pox. Chicken pox is highly infectious. The first symptoms are usually a chill, vomiting, and pain in the back. The rash in its early stages does not resemble that of smallpox, but at a later stage of the disease has much the same appearance as that of the early stages of smallpox. As a rule the disease is mild in children, but may sometimes be quite severe in adults. There are seldom complications, although cases of nephritis (inflammation of the kidneys) and paralysis have been reported. Unless the pustules are rubbed or scratched or unless they are unusually large, there are no scars.

Smallpox. Smallpox patients are almost always removed to a hospital, so that this disease is very rarely nursed in the home. It is an acute fever, highly infectious. The first symptoms are intense headache, pain in the back and limbs, and vomiting. When the rash first appears it resembles that of scarlet fever, but in four days it changes to the characteristic rash with the peculiar odor of smallpox.

The treatment is that given to most fever patients, and the

IMPORTANT FACTS IN REGARD TO

DISEASE	INCUBATION PERIOD	RASH APPEARS	CHARACTER OF RASH
Typhoid fever	Usual: about 2 weeks. Extreme: 5 to 23 days	7th to 10th day	Red, elevated; disappears under pressure. Usually found on abdomen
Measles	8 to 12 days	3d to 5th day	Small red spots, like fleabites. First on forehead, face, back of neck, and other uncovered parts
Rubella or German measles	Usual: about 2 weeks. Extreme: 10 to 24 days	1st to 3d day	Resembles either measles or scarlet fever; comes first on face
Chicken pox	4 to 14 days	2d day	Small red vesicles, first on uncovered parts of the body
Smallpox	Usual: 12 to 14 days. Extreme: 10 to 21 days	3d day	First on forehead and face, wrists, and palms of hands
Scarlet fever	Usual: 2 to 4 days. Extreme: few hours to 3 weeks	2d day	Bright red pin point, first on chest and upper extremity

patient is kept in bed, on a liquid diet, with cool baths, the affected parts covered with lint wet in an ice-cold, mild disinfectant solution. When crusts form over the rash, they are softened with vaselin. Care should be taken to prevent rubbing or scratching of the scabs, as this increases the danger of scars. The eyes must be washed with boric acid solution.

Vaccination. Smallpox is not now the virulent disease it used to be. Most cases are mild, and the percentage of deaths is low. Before vaccination was discovered, about 95 per cent of the population suffered from smallpox and at least 35 per cent of those attacked died of the disease.

CERTAIN COMMUNICABLE DISEASES

RASH FADES	DURATION OF DISEASE	PATIENT DANGEROUS TO OTHERS	IMMUNITY CONFERRED
2d or 3d day. Successive crops to 3d week	14 to 34 days	8 weeks from first symptoms; may become permanent germ carrier	Second attack known to occur
7th day	3 weeks	3 weeks from rash, if cough has ceased	Usually, but occasional second attack
1st to 4th day	1 week	3 weeks from eruption	Yes
Comes and goes. First crop followed by others	6 to 7 days	Until scabs are gone	Yes
9th day scabs fall	14 to 21 days	Until scabs are gone	2d attacks known
3d to 7th day	3 to 8 weeks	Average time about 6 weeks from appearance of rash. Infectious until throat, eyes, and ears are healed	2d attacks rare

The germs of smallpox are long-lived, and have been known to exist for months in clothing, books, letters, and other things. They are carried by flies, and may be borne in the air for a short distance. The fact that one is in good physical health does not protect against the germ of smallpox. There are only two ways to become immune: one is to have the disease, even in a mild form; the other is to be vaccinated. Those who have been vaccinated either do not contract the disease or have mild attacks. The only deaths that occur from smallpox are, practically without exception, among those who have not been vaccinated at all, or not for many years. During an epidemic in Philadelphia in 1903—

1904, not one person who took the disease had been vaccinated within five years. In England, in one county where vaccination was not practiced, the epidemic continued for months in spite of all means of disinfecting and medical treatment, and was not stamped out until vaccination was used. Concerning an epidemic in Porto Rico in 1916, similar facts are recorded, vaccination not having been enforced there because of lack of funds. At least 4000 children in the schools of San Juan had been vaccinated, and not one case occurred among them; but more than 500 cases occurred among the adults in San Juan and the surrounding country. Upon the appearance of the disease, money was appropriated by the government, vaccination was made compulsory, and vaccinators were appointed. Those suffering from the disease were taken to hospitals, their homes were disinfected, and the disease was soon stamped out. At first, through accident or intention, some persons were not at home at the time of the visits of the doctors, and the severe cases and deaths which occurred were practically all among these persons.

Vaccination will give immunity, ordinarily, for from five to nine years. The exact period varies with the individual. A safe rule to follow is that of being vaccinated once in seven years, or oftener if there is an epidemic or if one has been exposed to the disease.

Infantile paralysis or poliomyelitis. Children under five years of age are most often attacked by infantile paralysis, but older children and even adults are not immune. The germ attacks the spinal cord and brain, and is found in the secretions of the mouth and nose, and in the evacuations from the bowels. The disease is a communicable one, and although the methods of controlling it are not well worked out, it is probable that healthy carriers of the germs are chiefly responsible for its spread. The infectious material may be transferred by contact with another case or with a carrier and doubtless upon soiled utensils, handkerchiefs and towels, or by flies. Among the lower animals only monkeys can be given the disease. It is not believed that dogs, cats,

mice, insects, dust, or water have anything to do with its spread. The following are the directions and regulations of the board of health of the state of New York for the control of this disease:

When poliomyelitis is prevailing, if any of the symptoms above described appear in a person of your household, isolate the patient and summon a physician immediately.

When no physician is in attendance, the head of the household is required to report at once to the health officer any case of communicable disease occurring in the household.

Protect your family by sending the patient to a hospital, if the family physician approves of this course. If the patient must be isolated at home, provide a nurse if possible.

If the patient has just attended school or Sunday school, advise the health officer immediately.

The proper disposal of the discharges from the nose, throat, and bowels, not only of the patient but of all in isolation, is of the greatest importance in preventing the spread of the disease. Secure detailed instructions from your physician or the health officer.

Physicians and health officers are required by law to perform certain duties. In the interest of public health, parents should give their assistance and not cherish ill feelings against them on account of inconvenience and discomfort which may be caused by quarantine measures.

* * * * *

The infectious agent is said to be readily destroyed by menthol, bichlorid of mercury, and a two per cent solution of hydrogen peroxid, A temperature of 45-50° C. (113-122° F.) for one-half hour will kill the organism. Carbolic acid is relatively ineffective.

* * * * *

In the presence of an outbreak of poliomyelitis, a search for, and a careful examination of, ill children should be made. *All children having fever should be isolated pending the diagnosis.*

A placard must be posted on the house, apartment, or room occupied by a patient, stating the existence therein of a communicable disease.

The patient must be isolated for a period of at least three weeks

and those in contact with the patient for two weeks from date upon which they last saw the patient.

After isolation by the health officer, no patient shall be removed from or to any place without permission from the health officer. A case must not be removed to another municipality without permission from the health officer thereof.

In the presence of an outbreak of several cases, it may be necessary to prohibit attendance at public gatherings. Require special care in the cleaning of glasses and other utensils used by the public at soda-water fountains, picnic grounds, and elsewhere. The use of individual drinking cups should be urged.

In the presence of an outbreak, it is highly important that so far as possible all milk used by children should be pasteurized. Milk bottles or other containers should not be left at a house where a case of poliomyelitis exists.

Household pets should be excluded from the room occupied by a patient, and flies should be excluded by effective screening.

When proper isolation and satisfactory care for the patient cannot be secured in a home, the Department recommends that the patient be removed to an isolation hospital. However, it is to be noted that during the early stage of the disease the patient needs complete rest in bed, and transfer to a hospital, if not conducted with regard for the condition of the patient, may do harm.

Sick-room precautions should include attention to cleaning and disinfection of eating utensils, personal and bed clothing, rugs, door knobs, and other things handled by the patient or attendant. The health officer should see that all necessary instructions are given to householders, nurses, and attendants.

At the termination of quarantine, the body and hair of the patient and of those who have been in contact with him should be thoroughly washed with soap and water, and the room or rooms thoroughly cleansed with soap and hot water, aired and sunned.

Symptoms of poliomyelitis. This disease, like many others, begins like a cold, which is another reason for the prompt isolation of patients with colds. The incubation period is from two to fourteen days, and some of the following symptoms may be present

before there are any signs of paralysis: an apparent cold in the head, weakness, fever, perhaps diarrhea or other digestive disturbances, pain, especially along the spine, stiff neck, and sometimes convulsions. There may be early paralysis of a part of the body, or the paralysis may not appear until convalescence.

Use of serum. During the epidemic of infantile paralysis in New York in 1916, and before that date in France, blood serum drawn from convalescents was injected into others suffering from the disease. The results of this treatment were promising, but the fluid is hard to obtain and the treatment seldom given.

Treatment of paralyzed muscles. Many cases where paralysis appears make a complete recovery. In some instances the paralysis disappears rapidly; in others weeks and months are required for recovery. Frequently the cells of the motor nerves in the spinal cord are injured but not destroyed. If the cells are destroyed, there is no hope of restoring power to the muscles; but if they are merely injured, it is possible to restore the muscles to partial if not complete use by proper orthopedic treatment. As the process of the recovery of the muscles may extend over months and years, the treatment should be continued indefinitely. Muscles apparently completely paralyzed have recovered at least partial use after years of apparent uselessness. I have treated children who had been at least three years without treatment, whose muscles were wasted and apparently lifeless, and who were unable to walk; and after treatment I have seen them walking and able to use muscles which they had not been able to use since their paralysis.

The treatment used is massage, electricity, and active exercise. The type of exercise used is known as "educational"; in this the patient is taught the object of the exercise and is encouraged to make an effort to contract the muscles affected. In some clinics the child's attention is drawn to the muscles by pricking them with a sharp-pointed stick or pencil; but I have found this unnecessary, for children even two and a half to three years old can be made to understand what is wanted, and after being taught

to observe the movement in one leg, will make an effort to move the other in the same way. Older children, as young as five or six years of age, were shown muscle charts and made to understand something of the position and working of the muscles. Almost without exception they were interested, even asking the name of a particular muscle and trying hard to make it do its work. If there is extreme weakness or no apparent life in the muscle, the child should be taught to make the effort while the nurse makes the movement and so exercises the muscle. The treatment should not be abandoned even though there seems little improvement, for as long as there is life in the muscle, exercise will strengthen it. At first ten to twenty minutes once or twice daily is long enough for a treatment, including massage and exercises. As the child and the muscle become stronger, the time may be extended to forty or to sixty minutes, according to the age of the child and the number of muscles involved. The muscles work best if warm, therefore heat should be applied before giving the exercises. This may be done by hot compresses, a hot bath, or one of the appliances made for this purpose.

Braces. Every paralyzed child should be under the care of an orthopedic surgeon, and no braces should be put on him unless ordered by the surgeon. Braces are useful in preventing the deformities which frequently follow paralysis, but they must be exactly right to be of service, and as the child grows they must be changed. They should not be too heavy, and they should not, more than is absolutely necessary, interfere with the use of the paralyzed muscle. The instrument maker understands the mechanism of the braces, but not of the human body. The good orthopedic surgeon understands both, and whatever braces are worn should be selected by his advice.

A brace is worn to prevent deformity by holding the body straight, but it retards the growth of the muscles more than it aids it, and if a brace is used there is all the more reason for regular massage and exercise.

CHAPTER TWENTY-ONE

TUBERCULOSIS

THE subject of tuberculosis has been much discussed during the past few years, and for many generations the disease has been one of the most dreaded of all that exist. Until comparatively recent times it was believed incurable, in spite of the fact that many cases in which a person "given up by all the doctors and told that he had less than a year to live" went on living to an active and cheerful old age. There is still much ignorance on the subject, and many cases end in death when proper knowledge and care on the part of the patient would have resulted in cure. Many, perhaps most, cases of tuberculosis are curable if taken in time. If, however, the patient, not realizing the cause of his ill health and neglecting to have himself examined, allows his health to run down before beginning any treatment, he may have a hard fight to build himself up again. Some, when told that they have symptoms of tuberculosis, become so terror stricken that they give up the fight at once. Others refuse to believe that they have anything serious the matter with them and decline to take precautions. It is important, therefore, to understand the conditions and causes of tuberculosis in order to appreciate the importance of taking a case of the disease in time to effect a cure.

Tuberculosis not inheritable. The germ of this disease was discovered by Koch in 1882. Up to that time, and for some years after, it was believed to be an inherited disease. Children of consumptive parents were expected to have the disease and die of it, and in many cases they did. It is now understood that the inherited tendency consists of a low power of resistance to the disease; that tuberculosis is contracted, not by inheritance, but from the exposure of infants and young children to the germs; and that the prevalence of tuberculosis among the children of tubercular parents has been largely due to the fact that it is a communicable disease and that in such families no effort had been made to stop the spread of the contagion. Also, because it was

expected that members of such families would have the disease and would die of it, practically no fight had been made.

In numerous cases, also, the so-called consumptive families were found among the poor working class, compelled to live in insanitary conditions, with insufficient light, air, and food; and these people had little time or money to spend in attempts to cure a disease which they believed incurable. They developed a sort of fatalism in thought, believing that if it was their destiny to die of consumption at twenty, thirty, or an earlier age, they would die of it and could not escape their doom.

Today the disease is so much better understood, the means used to cure it are so sensible and simple, and so many cures are made in the early stages, that no one should give up hope.

The tuberculosis germ. There are four varieties of the tuberculosis germ, two of which infect man. One of these is known as the *human type*, the other as the *cattle* or *bovine type*. The human type is derived from the sputum of human beings who have the disease, and these germs are thrown out of the mouth and nose in talking, laughing, sneezing, or spitting. Other persons draw these germs into the nose and mouth by breathing in dried sputum or the droplets or spray in which they are borne, or the germs may be carried into the mouth by hands which have come in contact with the hands of the patient or with something infected, such as dishes, a pencil, clothing, flowers, or public towels or drinking cups. Infected milk, food, or water also will convey the disease.

After entering the mouth, some of the germs may infect the tonsils, others are swallowed in the saliva or in food and are carried into the stomach. Many of them are killed by the acid in the gastric juice, but others pass into the intestine and are absorbed into the blood. In the blood they are carried through the body, and settle in whatever part is favorable to their development. They may find a place in the joints, in bones, in the kidneys, in the lymph nodes, or in the lungs.

The bovine type of the germ does not often affect the lungs

of human beings, but attacks the joints, bones, and the nodes of the lymphatic system. It is carried into the human body by raw milk, but can be killed in milk through pasteurization. It is often found in butter, where it will live for weeks. The danger of contracting tuberculosis from eating the flesh of infected cattle is small, for the germs are killed in cooking. In many states a strict examination of dairy cattle is made, and cows proved to have the disease are killed.

In open air and sunshine, tuberculosis germs quickly die, but in damp, dark places they will live for weeks and months. Before moving into a house or apartment one should make sure that no one living there recently has had the disease. In any case the floors and walls should be thoroughly cleaned. If a consumptive is known to have lived in the house, it should be disinfected, repainted, and papered throughout.

Checking the spread of tuberculosis. If all the tuberculosis germs could be killed at their source, there would soon be no more consumption in the world. A person having the disease should take every possible precaution to keep it from infecting others. The members of the family, and even the physician, often feel so unwilling to tell the patient that he has tuberculosis, for fear of the mental effect, that the germs are spread not only among the family but among others. In most states the law requires a report on such cases, and it is not only a violation of the law, but unkind to the patient, to fail to make this report. When the public really understands the possibility of a cure in the early stages of the disease, it will be seen that the sooner a patient is told of his condition and begins to carry out the doctor's orders, the better chance there will be of recovery. Most persons, if told the truth in regard to the importance of doing so, will be quite willing to take the precautions necessary to protect others.

As the germs are contained in the sputum, this should be received either in vessels containing a disinfectant or in paper cups or bags that can be burned immediately. A consumptive should •

not kiss any one, should sleep alone, should make sure that his dishes are disinfected before being used by others, should not expectorate in the street or in street cars, or in a pocket handkerchief, and should not put coins, or anything likely to be used by any one else, into the mouth.

Treatment of tuberculosis of the lungs. The measures found efficacious in curing tuberculosis of the lungs are rest, fresh air, sunshine, and proper food. Medicine has no effect, except as it may be a tonic for increasing the appetite, or as it may help, like cod-liver oil, in building up the tissue. Valuable time is often lost by taking patent medicines which claim to cure but have no beneficial effect whatever. Many such medicines contain drugs or alcohol, which will produce a temporary mood of cheerfulness, but have an ultimate evil effect. When the disease has not progressed too far, complete change of climate is always best, and even where it has progressed considerably this may have a good effect. The high altitude and bracing air of Colorado and the Northern mountains are better than lower, warmer climates. The debilitating effect of a Southern climate upon the general condition of the patient may more than counterbalance the good effect of its warmth.

If a change of climate is impossible, arrangements can be made to let the patient sleep out of doors. Many houses have a balcony or porch, which can be turned into a sleeping porch by putting up awnings or Japanese shades. At no very great cost, sleeping porches or sleeping sheds can be erected, or a tent placed in the yard. I have known persons in the early stages of the disease to recover, by sleeping by open windows and paying attention to their food and to proper rest.

Many medical authorities now believe that light is very helpful in the treatment of tuberculosis. In giving the light treatment a large part of the body is exposed to the sun for stated periods. Too long exposure to intense light is harmful; so no one should attempt to give himself the treatment without medical advice.

Importance of rest. A consumptive should rest. If there is fever, the patient should stay in bed. It is not desirable that many visitors should be allowed, and complete quiet should be maintained. All fatigue, even unnecessary walking about the room, should be avoided. Coughing is frequently the result of nervousness, and in many cases it can be controlled; this the patient should do as far as possible.

Food for consumptives. Eggs and milk should be taken in abundance. The more fat a patient eats the better, and meat also should be eaten. Tuberculosis patients have usually little appetite, but crave a variety of unwholesome and unattainable foods. If the food is prepared carefully and served daintily in as great variety as possible, much can be done to tempt them to eat. It is possible to introduce eggs and cream into many dishes without the patient's being aware that the increased nourishment is there. An egg can be beaten into cream sauce or a lemonade; vegetables can be served with cream; and sometimes an egg poached in bouillon with or without a spoonful of sherry can be relished when more solid food would be refused. Custards, puddings, and salad dressings also admit of adding beaten eggs to the original receipt without essential change in the flavor. Seasoning has a great deal to do with an invalid's relish of food, and the person who cooks for invalids should make a study of the various seasonings which make a dish savory without scorching the palate with pepper or other spice in excess.

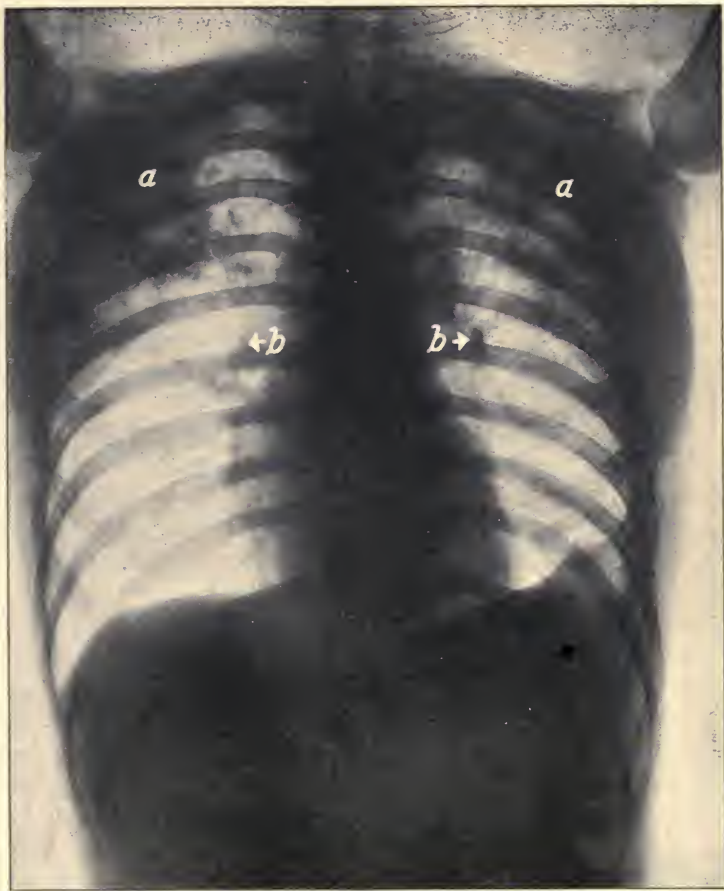
What to do for a hemorrhage from the lungs. Few emergencies are as alarming as the sudden appearance of blood. It is at such times that the nurse must show her self-control and her ability to meet an unforeseen occurrence. If not in bed when the hemorrhage occurs, the patient should be put to bed, made to lie on the side of the body on which the lung is more diseased, and kept as quiet as possible. The patient may be given cracked ice, and if any soothing medicine for the prevention of coughing has been prescribed by the doctor, a dose of this may be administered. Do not rouse



Dr. A. P. Evans

FIG. 58. Radiograph of the chest, showing tubercular infection of the lungs. The small dark areas are tubercles, which, because they become surrounded with calcium, cast dark shadows on the photographic plate. The dark shadow in the center of the photograph is the heart.

a fainting patient, as this condition is a natural check on the flow of blood. When nursing an acute case of tuberculosis, it is well



Dr. A. P. Evans

FIG. 59. X-ray picture of a more advanced case of tuberculosis. The dark areas (*a a*) in the upper lobes of the lungs are badly infected.

to secure from the doctor exact directions for this particular crisis.

Advantages of early diagnosis and treatment. The earlier the diagnosis is made and treatment begun, the greater the chance of

recovery and the less danger there is of infecting others. The early symptoms of tuberculosis of the lungs are a loss of weight, unusual fatigue, little appetite or perhaps indigestion, a slight cough or clearing of the throat, particularly in the morning, and sometimes expectoration. If the temperature is taken, it is found to be subnormal (96.5° to 98.4° F.) in the morning and above 99° in the evening. There may be a feeling of chilliness in the afternoon and a slight sweat at night.

Some persons may recover from this stage without special treatment; but many patients who take no steps to check the progress of the disease go on into its open stage, where recovery is much more difficult. If all persons who find themselves suffering with any or all of these symptoms would undergo a thorough examination by a good physician, the percentage of recoveries would be largely increased. Many people, either because they do not know these symptoms or because they refuse to recognize them, neglect themselves or attempt to treat themselves until the disease has progressed to the point where recovery is difficult or almost impossible, and until by their lack of care they have infected those around them.

Hospitals for tuberculosis patients. Many hospitals exist which are given up entirely to the treatment of tuberculosis. Some are expensive to the patient, but others are supported by states, counties, or cities, and in these a consumptive has little or no expense to bear. The advantages of entering a hospital are several. (1) The discipline is advantageous. Too often members of a family yield too much to the patient in the matter of remaining in a close, hot room and eating improper food. (2) The required rest and quiet and freedom from interruption are secured in a hospital, whereas at home these are often difficult or impossible to obtain. (3) The proper food is supplied. (4) The hospitals are built with sleeping porches or open wards, so that a patient can be out of doors day and night.

It often happens that the father of a family feels that it is

financially impossible for him to give up his work. Even in such a case much can be done to aid in the fight against the disease. Societies have been formed in various cities for this purpose, aiding in the building of porches and giving allowances to help the families of laboring men so that they may stop work long enough for a cure. Many hospitals in large cities have connected with them social workers who give their whole time to this work. One of the largest and most successful of these organizations is in connection with the Massachusetts General Hospital in Boston. In this hospital many such patients are treated yearly. The social workers go into the homes and help by their advice and by necessary financial aid to arrange matters for the patients. They have at their disposal a fund for building porches or making other arrangements for out-of-door sleeping, and they also provide milk, eggs, and other nourishing food. Patients are carefully instructed in the care of themselves. They receive record sheets upon which they are expected each day to put down the amount of food taken, the amount of sleep or rest, and their various symptoms. Physicians in the hospital prescribe the whole life of the patient, even to the number of visitors allowed. During the patient's confinement in bed the social workers make visits to the home, and when convalescent the patient himself reports to the hospital at stated intervals, bringing the charts. After weighing and examining him, the physicians then give directions for the next interval between reports. Many cures have been effected in this way.

Advanced stages. Even in late stages of consumption recovery is sometimes possible. I knew one case of a girl in "the last stages of consumption" who had been told that she had but three months to live, and decided to go to Colorado. No one believed that she would live to get there, but she lived for twenty years thereafter. If change of climate is made at the first appearance of the disease, one may return to the lower altitude, and as long as health and strength are kept up there will be no return of the sickness. The

germ, however, may remain quiescent in the lungs for years and then become active; hence a healthful, out-of-door life, with good food, must be the rule.

Much may be done by determination and ingenuity. In one case the mother of several little children was told that she had consumption, but the physician added, "Don't look so frightened; I can cure you, but you must do what I say." The régime that he prescribed included long country walks and fat-building foods. The young woman reduced her household duties to the lowest possible number, abandoning absolutely every unnecessary "frill" in her scheme of living in order to have the time and strength for out-of-door life and the money for needed food and help; and she recovered.

Many years ago, long before the importance of out-of-door life in cases of consumption was recognized, a clerk dependent on a moderate salary for his existence was told that he must go to Colorado or some similar climate and live out of doors if he expected to live at all. He took counsel with himself, bought a lot in the outskirts of the city, on which were some large trees, and had a carpenter build him two or three rooms in the trees. Here he lived, with a man-of-all-work to cook for him and look after his quaint establishment, for many years. In the end he came to like the tree house so well that when he had completely recovered and had accumulated money to retire on, he built himself another house in a tree, out in the country, where he went on living in a peaceful and hale old age.

In some way or other it is possible for a determined person to get the needed fresh air and exercise to cure consumption. A disease so widespread and so prolific of germs as tuberculosis is, will cause so much trouble if allowed to run its course that it is economy for the state to step in and cure it; and this the state, the city, and many large corporations now perceive.

CHAPTER TWENTY-TWO

TYPHOID FEVER AND PNEUMONIA

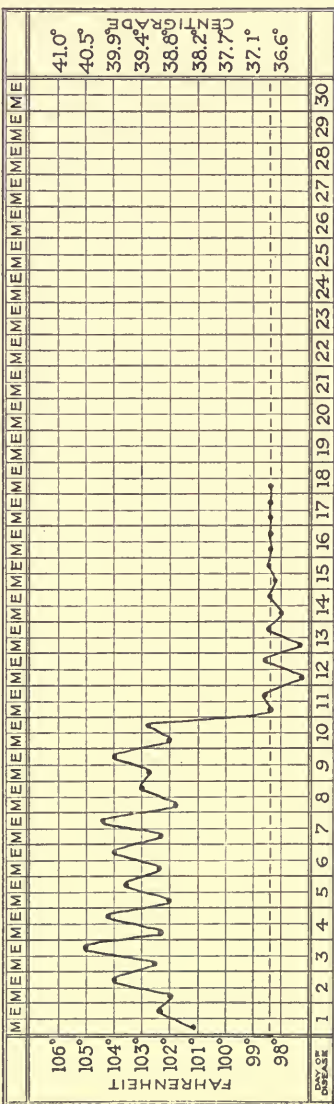
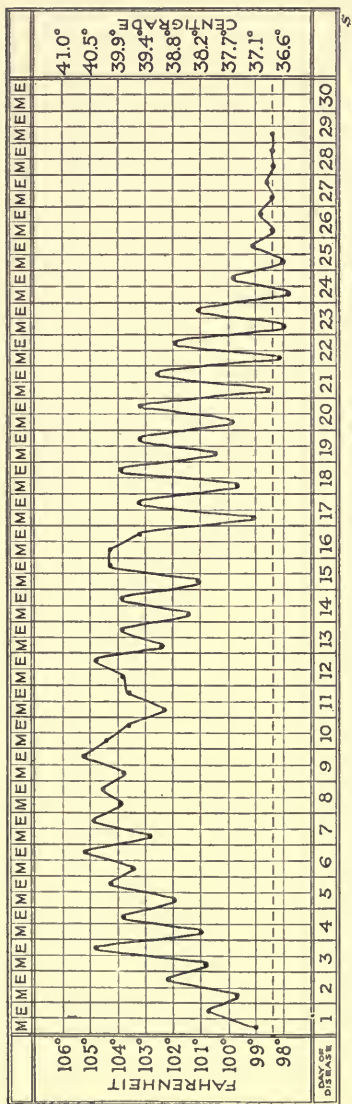
Two of the diseases which it is most important for the home nurse to understand are typhoid fever and pneumonia. Both are highly infectious, and in both the recovery of the patient depends very much upon the nursing. Moreover, the conditions which predispose to contagion in the case of these two diseases are very common, and infection can often be avoided by the use of simple precautions. Finally, the home nurse is likely to have a case of one or the other on her hands at some time. A mild case of typhoid fever can sometimes be taken care of without employing a trained nurse; and pneumonia comes on so suddenly and is so serious in its first stages that it may not be possible to get a trained nurse until the disease is well under way. Even when a trained nurse is employed, the necessity for constant care is such that some member of the family is almost always called upon to assist in the care of the patient, and the more intelligent the amateur nurse proves the better it is both for the patient and the trained nurse. It is one of the most restful and comforting things in the world for a nurse to find that a person who is willing to help is really going to be a help and not an added responsibility.

Choosing and caring for the sick room. The proper selection of a room for a patient suffering from typhoid fever or pneumonia is very important. It is especially desirable that the room of a typhoid patient be next to a bathroom, in a quiet part of the house. Sweeping should be done with a damp broom or with a broom covered with a damp cloth, and dusting with a damp cloth; or an oiled mop and dustcloth may be used. If the patient is nervous or delirious, it is often better for the nurse to take care of the room herself. All food and medicines should be given regularly, and exactly according to the directions of the physician. The whole plan of the treatment may be disarranged if some apparently trifling thing is omitted or changed. In fact, it may be said that there are no trifling things in the business of nursing.

TYPHOID FEVER

In the United States typhoid fever holds the fourth place as a cause of mortality among communicable diseases. The germ is taken into the body through the mouth and thrown out in the excreta. It is found in the blood and in the intestine, in the spleen, the liver, and other parts of the body. It attacks the intestine, particularly in the lower portion of the ileum, in the parts called "Peyer's patches." The incubation period is ten days to three weeks. The germ may live for a long time in milk, but it dies quickly if exposed to sunlight and air. In water it lives for only about seven days. Many cases of typhoid fever are found among persons who have been away from home for the summer or for a few weeks, the disease being contracted by drinking infected water or milk, and appearing after they return home. A considerable number of persons who have typhoid fever still carry the germs after convalescence, sometimes for several months and sometimes as long as the person lives.

Symptoms and course of the disease. The first symptoms of typhoid fever are headache, nausea, pain in the back, legs, and abdomen, loss of appetite, sometimes bleeding from the nose, constipation followed by diarrhea, coated tongue, and a characteristic rash which appears generally upon the abdomen. Later in the disease the physician's examination will reveal an enlarged spleen and the germ in the blood. The stools become liquid and of the color of pea soup. The temperature rises steadily, reaching 103° or 104° at about the end of the first week, remains at this point for three weeks, and then begins to decline. In some cases the fever ends in two weeks, and in others it continues to the fifth or sixth week; but in a normal case of typhoid the temperature should begin to go down by the fourth week, a little lower each day, until the normal point is reached. The pulse is slow in proportion to the fever, not becoming rapid until a later stage of the disease or until the patient has become weak, sometimes reaching



FIGS. 60-61. Temperature charts in a case of typhoid fever (upper figure) and in a case of pneumonia (lower figure).

In typhoid the fever disappears by lysis (gradually); in pneumonia it disappears by crisis (suddenly).

its highest rate when there is no fever. Any sudden change in temperature or pulse in the midst of the illness is a danger signal.

Typhoid patients are liable to sudden changes and relapses which make it extremely necessary for the nurse, even if she is in charge for only an hour, to be thoroughly informed regarding the nature and course of the disease. A nurse usually instructs the member of the family who relieves her, as far as she can, but in the stress and hurry of illness it is not easy to give comprehensive instructions even if one has a talent for teaching. The amateur assistant should get all the information she can beforehand from the physician and the nurse, and if there is any doubt about remembering the various points she should keep a notebook.

Care of excreta. The disinfection of excreta in typhoid cases is important, and this includes urine as well as the discharges from the bowels. Pouring a disinfectant solution on excreta and emptying the vessel at once is not enough; it should be allowed to stand, covered, for an hour or more for the disinfectant to take effect. The best disinfectants for the bowel movements are limewater, and carbolic acid solution with one part of acid to twenty parts of water, or formalin.

No bed pan should be emptied without careful examination, and if there is any unusual appearance whatever the stool should be saved. As stated previously (page 96), a doctor or nurse will detect signs of a hemorrhage when the untrained eye does not. Blood coming from the bowels, unless near the rectum, changes color completely before it is passed.

Bathing, and the "drop." Baths are given every two or three hours, according to the necessity of the case and the degree of fever. The temperature is taken upon the hour indicated. If the fever reaches the point where the bath is necessary, the patient is bathed for fifteen or twenty minutes, dried, covered up, and left to rest (page 119). At the end of half an hour the temperature is taken again, and this temperature indicates what is called the "drop" from the bath, or the result of the bath. In recording

the temperature, the "drop" is not put in the line with the other temperature on the chart, but is put directly under the temperature taken at the regular hour before the bath was given. Down from this we draw a dotted line to indicate that this last temperature was the "drop."

Hemorrhage in typhoid fever. Hemorrhage from the intestine is one of the common complications in cases of typhoid. Often the first indication of this is a lowering of the temperature. If there is a radical difference in temperature from the last one recorded on the chart, the thermometer should be well shaken down, the mouth examined to see that it is not too dry, and the temperature taken again. If this difference still appears, the fact should be reported immediately to the nurse, or, if you are taking care of the patient without a nurse, call the doctor. The blood does not always show at first, especially if coming from high up in the intestine. After reporting to the nurse and the doctor, place hot-water bags at the feet if they are cold, and an ice bag on the abdomen. If the hemorrhage becomes excessive, raise the foot of the bed. The patient must be kept absolutely quiet, and not allowed to suppose that there is anything wrong. If there has already been a hemorrhage or the doctor has reason to fear one, the nurse should get from the doctor explicit directions for such an occurrence. It is always best in taking care of such a case to have the doctor leave directions for all possible emergencies so that no time may be lost in carrying them out. At critical times the loss of a very few minutes may be disastrous.

Delirium. The typhoid patient should never be left alone. Delirium is often not recognized immediately. The patient may be able to talk intelligently on any subject, answering questions coherently, and still be slightly delirious. The delirium shows at night, as a rule, and often takes the form of wanting to get out of bed; in many cases the patient has a persistent idea that there is something, either business or pleasure, which he must get out and attend to. The patient does not always speak of this idea,

but when left alone he immediately takes the opportunity to get up and try to carry it out, often with serious and disastrous consequences to himself.

If there is extreme fever or delirium, the ice bag should be kept at the head. The patient should be kept quiet; there should be no talking or whispering, and the light should not shine into the eyes. The bed should be so placed that the patient does not face the light, and any artificial light should be covered. Not only is the glare of the light a strain on the eyes, but it may increase the tendency to delirium. The patient should not be allowed to sit up or move very much unassisted, as there is always danger of heart failure.

Bed sores. From the very beginning of a case the possibility of bed sores must not be overlooked, as this is one of the complications most to be dreaded in typhoid fever. Nurses called to a patient after the disease has made some progress often find the beginning of such a sore, due to the ignorance of the family. The back, elbows, heels, shoulders, and any part which presses against the bed may become sore. The under sheet must be kept absolutely smooth, and the parts of the body clean and dry and frequently rubbed with alcohol or alcohol and alum. The rubbing should be done in deep, small circles. The object of this is to keep up the circulation of the blood, as a bed sore is due to the lack of circulation caused by the constant pressure of the body against the bed. If the skin is reddened and shows signs of becoming sore, continue the rubbing unless the skin is broken. Salves soften the skin and encourage the formation of bed sores, and should be used only after the skin is broken. Oxid or stearate of zinc ointment helps to heal a broken sore. If powder is used on the back, rub the hand over the powder to keep it from forming lumps. Rubber rings can be bought to put under the back and keep it from pressing against the bed. Rings to fit elbows, heels, or any other part of the body may be made of absorbent cotton wrapped with a bandage.

Feeding the patient. Physicians disagree more about the diet of a typhoid patient than on any other one point in the care of the case. A few years ago the patients were not allowed anything but a liquid diet, and some physicians kept them on milk entirely, not allowing even broths. They were starved until they became ravenously hungry, and no matter how honest a person may be when well, a convalescent who has been treated by this method will steal food if he can get it. Many cases of relapse have come from imprudent eating at this time. At the present day many physicians give simple foods like toast and thoroughly cooked rice and eggs, and many other easily digestible soft foods, almost from the beginning of the disease, and allow the desire of the patient to dictate in some degree the choice of food. During the early stages of the disease, when they have no desire for food, they are given liquids in moderation; but when the appetite revives and the patient asks for food, easily digested semi-solid food is given. Some doctors give meat which has been ground fine and made into cakes. The convalescence of a patient fed in this way is much more normal, the appetite is not excessive, the patient will eat as directed, and will recover from the disease in a better condition, stronger and less emaciated. Physicians who use this method contend that there are no more cases of relapse than under the old method of feeding. Water is given regularly and abundantly.

Precautions to be taken by the nurse. The nurse should take every care to avoid contracting the disease, never lying down on the bed beside the patient, never eating food left in the room, disinfecting her hands after emptying vessels or handling the patient, going out into the fresh air each day, and disinfecting mouth and throat before eating. Inoculation with typhoid vaccine is also most desirable.

Typhoid vaccination. The value of vaccination or inoculation in typhoid fever is an established fact. It was introduced into the English army by Sir Almoh Wright, and met with such success

that it was soon used in the armies of other countries. It was used first in the United States army in 1909, and at that time only soldiers voluntarily submitting to the treatment were vaccinated. The results were so satisfactory that in 1911 it was made compulsory for all soldiers under forty-five years of age. The immediate decrease in the number of cases and deaths was marked, and in 1913 not one death occurred in the United States army from typhoid fever. Nurses and doctors in many of the large hospitals are vaccinated against typhoid, and some railroads and mills encourage vaccination among their employees. Children are peculiarly liable to the disease, and it is an excellent plan to have them vaccinated every four years.

It is not yet known how many years the immunity due to the effects of the inoculation actually lasts, but in the army it is considered best to repeat it every four years. This rule is a good one, and if one is nursing a case of typhoid fever or going to some place of uncertain sanitary conditions, it would be well to be revaccinated after a shorter interval.

Directions for using the vaccine. Three doses of typhoid vaccine are given at intervals of from seven to ten days. The best hour to take it is late in the afternoon, for as the reaction does not begin until three or four hours after the dose is given, the effects will be felt at about the hour for retiring and will wear off before morning. One should not exercise violently after taking the dose, and it should not be given to a woman immediately before or during menstruation.

The effect upon the system varies with the individual. There may be a rise in temperature to 101° or 103° , but in many cases there is merely a feeling of discomfort. There is a greater reaction after the first and the second dose than after the third. With children, there are practically no bad effects, though there is sometimes a slight local irritation at the point of injection. This inflammation may spread to the nearest lymph glands. It lasts only from twenty-four to forty-eight hours.

PNEUMONIA

In addition to other interesting and important work that has been and is being done in the Rockefeller Institute for Medical Research in New York, much time has been given to the study of pneumonia, its causes and treatment. As a result of this and other studies certain conclusions may be reached:

(1) The majority of cases of pneumonia are due to the presence of pneumonia germs (pneumococci) of especially virulent strains which have been acquired by the patient from direct contact with some one else suffering from the disease.

(2) A small percentage of pneumonia cases are due to varieties of pneumococci of low virulence which are found in the mouths and throats of many healthy individuals.

(3) Attacks caused by the more virulent strains of germs are generally severe, and the percentage of deaths is large.

(4) Cases caused by the less virulent and more widely distributed varieties of the germ are of moderate severity, and the percentage of deaths is low.

(5) Lowered bodily resistance increases the tendency to the development of the disease with both kinds of germs, but this is more true of the second type than of the first; for with the more virulent type of germ the presence of the germs is of great importance and may determine the onset of the disease, however strong and vigorous a person may be.

(6) The disease should be considered infectious, like any other communicable disease. Physicians should be required to report cases to the health authorities, and isolation of the patient should be strict.

Among other causes of lowered bodily resistance are chilling of the body, excessive fatigue, previous disease, "colds," and excessive use of alcohol. The larger number of pneumonia cases among men is probably due to the lowering of bodily resistance

by fatigue and the use of alcohol. Cases of so-called "alcoholic pneumonia" are particularly fatal.

Symptoms and nursing of pneumonia. In most cases of pneumonia the attack comes suddenly, starting with pain in the lungs, a chill, a cough, rapid breathing, flushed cheeks, and abnormally dry skin. The temperature runs up to 104° or 106° ; the respiration is very rapid, often going as high as 50. Fever continues from three to ten days and usually abates quickly, or by crisis. At the time of this crisis the patient must be carefully watched, for although it is only one stage of the disease, the drop in temperature is frequently accompanied by extreme prostration and it is therefore a critical time for the patient. Heat should be applied externally, the pulse carefully watched, and a stimulant given if necessary. The patient should be kept as quiet as possible and disturbed for baths and treatment only when absolutely necessary.

Delirium often comes early and continues well into the disease. The patient must be carefully watched to prevent his getting out of bed or sitting up suddenly, as in every case of pneumonia there is much danger of heart failure. An ice bag should be kept upon the head, and if the delirium becomes excessive a cold sponge bath may be given. The fresh-air treatment is used, and the patient must be protected against the cold with light-weight woolen covers and wraps. The strength must be kept up by nourishing, digestible food, but overfeeding should be avoided. The bowels should move regularly, and no distention of the abdomen be permitted, as the pressure of gas in the intestine will increase difficulty in breathing. The disease will run its own course, ending naturally, and the chief aim of medical care and nursing is to give the patient strength to make a fight. Plenty of water should be given, as the poison is in this way eliminated by the kidneys and through the skin. As the germ is found in the sputum, the same care must be taken in disinfection as in the case of diphtheria and tuberculosis. If not guarded against, the disease may

spread to other members of the family, and the nurse may find herself called on to care for two or three patients instead of one.

Treatment of pneumonia with serum. An anti-pneumococcus serum made by a method perfected by the Rockefeller Institute for Medical Research has been used successfully in the treatment of pneumonia cases caused by certain varieties of the germ. This treatment has reduced the mortality among the cases produced by one especially virulent strain of the germ from 30 per cent to 5 per cent, but does not give protection against other strains. After an injection of the serum the patient's temperature will decrease two or three degrees, and there is also a decrease in pain and in the difficulty in breathing. The crisis is usually hastened and the course of the disease shortened. Experiments are under way determining its use as a prophylactic (preventive), and it is thought that it can be made most useful as a preventive during an epidemic. Immunity given by the use of this serum lasts only about three months. It is hoped that this treatment can be developed until it will be effective against all varieties of the germ.

CHAPTER TWENTY-THREE

NON-COMMUNICABLE DISEASES CAUSED BY BACTERIA

THERE has been within the past few years a great advance in our knowledge of chronic diseases like rheumatism, arthritis deformans (rheumatoid arthritis), and diseases of the heart, kidneys, and arteries; and many cases of these diseases which a few years ago would have been considered hopelessly incurable are greatly benefited if not cured by modern methods of treatment. There is still a difference of opinion among physicians as to the causes of a number of these maladies, but that many diseases besides those listed as "communicable diseases" are caused by bacteria, is now an accepted fact. Such men as Dr. Billings and Dr. Rosenow have proved that groups of bacteria may live and grow for long periods in certain tissues and organs of the body, and that from these foci or centers of infection bacteria are carried through the body in the blood and settle at different points, causing disease. Because early diagnosis plays an all-important part in the prevention and relief of the diseases caused by these bacteria, and because many persons fail to consult a physician until important organs have become infected and the disease has materially progressed, I have included this discussion of the subject, hoping to emphasize the necessity of early consultation with a physician in cases of this kind.

Diseases due to chronic infections. Bacteria may live for an indefinite length of time in the tonsils, nasal sinuses, around the roots of the teeth and in the bones of the jaws and face, and in chronic abscesses such as are sometimes found in the lungs or pleural cavities after pneumonia. Acute diseases caused by bacteria from these foci of infection are gastric and intestinal ulcers, rheumatic fever, appendicitis, inflammation of the gall bladder, acute arthritis (inflammation of the joints), and inflammation of the membranes, lining, and covering of the heart. Among the chronic diseases of which many cases at least are probably caused by this mode of infection are arthritis deformans, chronic

nephritis (inflammation of the kidneys), diseases of the walls of the heart, and arteriosclerosis (hardening of the arteries).

Early diagnosis is most important with these cases, so that the seat of the infection may be found and removed, and one should never abandon hope until all possible sources of infection have been proved neutral. The teeth should be examined by an expert dentist who has made a specialty of this line of work. A throat specialist should look for adenoids and diseased tonsils, for many tonsils that appeared healthy on casual examination have later proved to be foci of infection. According to Dr. Frank Billings, who has done such wonderful work along these lines, "The failure to find a focus in the expected situation should indicate an extension of the field of examination until it shall have been found."

Arteriosclerosis. Arteriosclerosis, or hardening of the arteries, is a disease which indirectly kills the majority of older people. It is primarily a disease of the blood vessels and walls of the heart. The walls of the arteries may be thickened and hardened by a deposit of lime salts along their whole length, or this thickening may occur only in certain sections of an artery or in spots. Sometimes the thickening will take place at the point where another artery branches off and the circulation of blood through the branch artery may be retarded.

Arteries which have become thickened lose much of their elasticity, and these conditions increase the work that the heart has to do to force blood through the vessels. At the same time that the heart may be doing this extra work, its walls may be weakened and lessened because of the sclerotic condition of the arteries carrying blood to them. Some of the results of this change in the walls of the arteries are aneurisms or saclike bulgings on the weakened arterial walls; apoplexy, which is due to the bursting of a blood vessel in the brain; diseases of the heart, kidneys, and liver, which are due either to the deficient blood supply these organs receive through the hardened arteries or to the same causes as the disease

in the arteries themselves; and a general aging of the tissues and breaking down of the health.

Arteriosclerosis may be due to a number of different causes. Sometimes it follows attacks of typhoid fever or gout; often it is the result of bacteria carried from chronic foci of infection within the body. Among the poisons which cause it are alcohol and (probably) the excessive use of tobacco. Long-continued hard work, overeating, and worry will help to wear out the arteries. Some cases of the disease are due to inherited weak vessels, age, or the wear and tear on the arteries incident to daily life, but many cases are due to causes that are within our control.

The first step in treating the disease is to remove the cause; stop the use of alcohol and tobacco and remove the focus of infection if one can be found. The walls of the arteries cannot be restored to their normal condition after being damaged, but danger from this condition may be reduced by keeping the bowels open, the skin in good condition by baths, and avoiding overeating, violent exercise, excessive work, worry, and excitement.

Rheumatism or acute rheumatic fever. Rheumatic fever is an acute inflammation of the joints, accompanied by high fever and an excessive amount of pain. It is believed to be caused by a germ brought from some part of the body, often from the tonsils. As a rule more than one joint is affected, but not all at once — a second joint swelling as the first improves. There is complete recovery from the disease, with no stiffness as a result.

The complications following the disease are more dangerous than the disease itself. Of these heart disease is the most serious. Sometimes it is of a form which is apparently light at first but develops later into a serious condition. Chorea (St. Vitus's dance) is a common complication. Tonsillitis, which is frequently present at the same time, is known now to be the cause, not the result, of the attack of rheumatic fever.

In nursing a case of this kind, great care must be taken not to move the bed. Touch the patient gently and only when ab-

solutely necessary; even unnecessary walking around the room should be avoided. If the weight of the bedclothes gives pain,

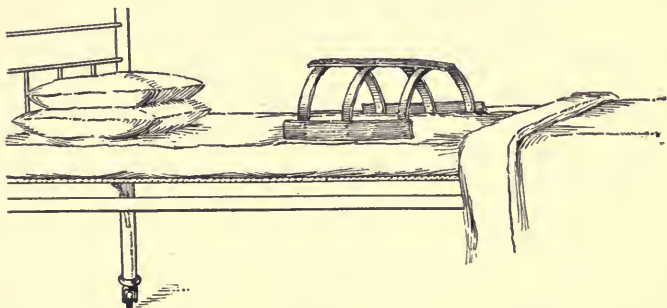


FIG. 62. In cases of illness the weight of the bedclothes is sometimes discomfoting to the patient. The figure shows an apparatus made from barrel hoops that can be used to carry the weight of the covers.

they should be supported by a frame which can be bought at an instrument store or made of barrel staves cut in half and nailed or tied to a strip of board.

The throat should be treated, and as soon as possible the tonsils removed. Diluted milk diet is given, and water should be drunk in large quantities. Hot and cold compresses may be used to relieve the pain in the joints. The patient should not be allowed even to sit up in bed until the doctor considers it absolutely safe, as the heart is much affected by the disease and many cases of heart injury can be prevented if proper care is used during convalescence.

Arthritis deformans. This disease is commonly called either *rheumatism* or *rheumatoid arthritis*. Its cause is not surely established, but there is much room to believe that it is due to germs from some focus of infection such as the roots of teeth, infected tonsils, or infected nasal sinuses. The attacks may come on slowly or start suddenly like rheumatic fever. It affects all the joints, large and small. In some cases there is a great deal of pain, in others little or no pain. Gradually the joints stiffen and as a rule

increase in size because of the growth of new soft and bony tissue.

For many years little attempt was made even to check the progress of the disease, for nothing was known of its cause. The treatment generally followed was one of diet and medicines, neither of which had an influence over the disease and generally upset the stomach of the patient and made life only so much the harder. Today there is still a great difference of opinion among the members of the medical profession as to treatment, but they agree upon one fact, that sources of infection must be diligently sought out and removed. If the disease is taken in its early stages and promptly treated, much can be done to check it. Several cases have come under my direct observation in which immense relief was given. One case, a woman over sixty years old, who had suffered from chronic bronchitis for many years and arthritis for eighteen years, had gradually become so crippled that she was obliged to use crutches and never went into the street alone. After two years of massage and forcible exercises, hot-air baking, and injection of vaccines prepared with cultures from her own throat, she was able to give up her crutches and use a cane, and went up and down stairs freely and out on the street alone. Her joints became more flexible and less painful, and her bronchitis was much improved. Other cases of shorter duration have been checked by removal of the tonsils and treating or removing the teeth.

At one time it seemed as if the vaccine treatment was to be the remedy for chronic cases of this disease, but it fails in numerous instances and now many physicians do not believe in it at all, but consider that the improvement in such cases as the one given above has been the result of the treatment of the source of the infection and the general good care and special treatment given to develop the muscles and improve the joints. Upon one point, however, all physicians agree: it is necessary to search for the focus of infection and remove it when found, and the sooner this is done the more sure the result will be.

Those cases which have gone beyond the first stages of the disease should not abandon all treatments, for though a cure may not be made there is always the possibility that by getting rid of the focus of infection the progress of the disease will be checked and some relief from the pain and discomfort present in these cases will be given. Food has practically no effect upon the disease, and as the appetite is sometimes uncertain with these patients it is best not to limit the variety of their food. Massage and passive and active movements of the joints help to prevent the stiffening of the joints and keep up the tone of the muscles.

Other chronic diseases caused by bacteria. Among other chronic infections may be mentioned Bright's disease, heart disease, and St. Vitus's dance. The latter is believed to be due to the invasion of the central nervous system by germs of the same kind that cause the other diseases discussed in this chapter. The teeth and tonsils of any one suffering from this ailment should be examined to see if the primary focus of infection is in these parts.

CHAPTER TWENTY-FOUR

FOOD FOR THE INVALID

THE ability to prepare food for an invalid is one great test of the fitness of a nurse for her profession. It may demand in some cases not only a knowledge of food values and skill in cookery, but an intuition as to what will please the taste of the patient. Particularly in tuberculosis and other wasting diseases, the appetite has to be tempted and the food varied, and recovery may in great measure depend on the nourishment that the patient receives.

Punctuality. One all-important point in serving an invalid is to have the meals on time. Promptly at the hour when the tray is due, it should appear. Nothing is more trying to a sick person than to have to wait for a meal. It is a good idea to plan your menus at least twenty-four hours ahead, so that you will be sure to have your materials in the house; then there will be no delay from waiting for them to be delivered.

The serving tray. There are two convenient types of invalid trays which can be bought. One is the tray made to sit on the bed; the other stands on the floor with the supporting part under the bed and the tray over the patient. The latter form is adjustable and is the more convenient, but is a little more expensive than the bed tray. If the patient must eat in her room for a long time, the comfort which a good tray will give overbalances the original cost of the tray.

Preparing the tray. The preparation of the tray is almost as important as the preparation of the food itself; for, frequently, the first appearance of the tray, as it is brought into the room, helps to determine whether the patient will or will not eat with appetite. The linen should be of the daintiest. The china should be the prettiest in the house, — thin, dainty, and varied. Many times a patient can be tempted to take food merely because, where yesterday she took it from a blue cup, today she is taking it from a pink one, or because something has been done

to show that the nurse has given thought to the preparation of her tray.

In arranging the tray, place yourself before it and make sure that china and silver and everything on it are as carefully placed as they would be on a table. Let the glass and cup be on the proper side, the knives and forks placed as they should be, and everything arranged so that there need be no changes made at the side of the patient. See that everything needed is on the tray. An invalid may lose all appetite and refuse to eat through having to wait while the nurse goes to find the necessary salt, pepper, spoon, or something else which, through carelessness, has been omitted.

Always go cheerfully to prepare the tray. There is nothing that makes an invalid feel more depressed than to see the nurse or the member of the family who is going to prepare her food sigh and wonder what she can get for her next. She feels that she does not want to eat anyway, and if it is so much trouble she would rather do without. If you wish her to enjoy her food, show her that you take pleasure in the preparation of it.

Details of service. Take care that the food that is to be hot is hot, and the food that is to be cold is cold. If the kitchen is far from the bedroom, a little ingenuity may be necessary in keeping food hot. Carry the broth or soup in a cup sitting in a bowl of hot water. Warm the plate for the meat or vegetables and cover them with a hot plate, or use a dish that has a water receptacle under it for keeping it hot or cold. It is well to have a little stove (gas, alcohol, or electric) on the same floor as the sick room, so that food may be reheated if necessary; for to an invalid half-warm food is unpalatable. Frequently the placing of a flower upon the tray, or doing anything that shows that it has been a pleasure and interest to you to prepare it, will help to tempt the appetite.

To eat alone is to many invalids a peculiarly dismal experience, and if the food can be made to show the personal touch, and to give the idea that some one has thought out the details and taken

pains to please, there is a kind of companionship in the very thought of it.

Planning menus. Never ask a patient what she would like to eat. As soon as she is asked that, she does not want anything. If she expresses a desire for one particular thing, unless it is forbidden, get it if possible. Give as great a variety of food and combinations of foods as your diet list will allow. If you know of certain foods which the patient fancies, do not give them too frequently, but hold them in reserve for the days when she is depressed and below par. Never give anything that is not permitted by the doctor, but stick absolutely to his diet. Sometimes one indulgence in something that is not exactly digestible may undo the work of the doctor for days or even weeks.

Providing the right quantity. When the quantity is to be limited, as is sometimes the case in the excessive hunger of typhoid fever, never put more upon the tray than the patient may eat. There is nothing more exasperating, when you are so hungry that you want to eat everything you see, than to have part of it carried away. Let the patient feel that she may eat everything that is on the tray. Occasionally, if the patient does not have a communicable disease, the nurse may bring up enough for two and take a meal with the invalid; or she may suggest that a member of the family shall eat with her. Where there is real interest and real desire to tempt the appetite, there are many little ways in which the nurse may help. It should be a positive pleasure to a nurse to be able so to prepare and serve food that her patient cannot resist it, no matter how averse to eating she felt before the tray was brought.

Pleasing the eye. When children are fed on a liquid diet, a change in the color or character of the glass often helps to relieve the monotony and tempt the appetite. A bit of ribbon tied around the glass, a quaint spoon, or some other little novelty will give a child a momentary interest and pleasure which goes a long way toward aiding digestion. Milk may be served with cream.

whipped upon it or the white of an egg beaten into it to make it froth up so that it can be eaten with á spoon. Individual ice-cream freezers are to be had, and if the doctor allows it, milk may be given in this form, seasoned and frozen. Fruit juices, such as orange juice, also may be frozen into sherbets. A dot of jelly on top of whipped cream adds to its attractiveness, and sometimes fruit juices can be frozen into a harlequin ice of two or three colors.

Liquid diet. The physician usually directs liquid diets, giving a list of things he desires to have used. Common articles of liquid diet are broths, beef extract, tea, milk, gruel, eggnog, cream, soups, cocoa, and buttermilk. Albumen water also is used, particularly in nausea. Sometimes the use of a siphon will make milk more acceptable to the patient. Eggs can be beaten up into many liquid foods if the doctor allows it.

Semi-liquid diet. In the semi-liquid menu are included such foods as jellies, blancmange made with gelatin or with Irish moss, meat jellies, custards, eggs, milk and cream, toast, asparagus, vegetables put through a colander, and strained oatmeal. Very definite directions should be secured from the doctor about this diet.

Soft diet. The soft diet is like the semi-liquid, but with the addition of chicken, scallops, brains, oysters, and creamed dishes.

Solid diet. A solid diet may include anything that the patient can digest. One can devise a variety of methods of cooking the same article of food. Nurses are taught to boil eggs by leaving them in hot water for seven minutes, the pan having been removed from the stove. This cooks them smoothly like a cream without hardening the white, and makes them much easier to digest. Small omelets cooked in individual pans, and with a very small amount of butter, are digestible and appetizing. Shirred eggs, prepared by breaking the egg into a buttered cup and setting it in the oven, are good. Eggs in the form of a bird's nest are attractive. To make these, beat the white of the egg, and when it

is like a meringue put it in a buttered plate, rounding it up and pressing it down in the middle to make a hollow, into which the unbroken yolk is dropped. The plate is then set in the oven and left until the white is a delicate brown and the yolk slightly cooked.

Toast may be varied by making pulled bread. This is done by taking a loaf of fresh bread, pulling out the crumb, and putting it in a very slow oven until it is crisp. Another attractive way to prepare bread is to cut the loaf into thin slices, not cutting through the crust at the back, but leaving enough of it whole to form a band to hold the slices together; put a little butter between the slices and set the whole in the oven until brown and crisp. Vary the shape of the toast by cutting it into strips and triangles.

Irish-moss blancmange. Irish moss may be bought at the drug store. It should be washed and soaked in cold water, one sixth of a cup of moss to a cup and a half of water, for twenty minutes or half an hour. Then it is cooked from fifteen to twenty minutes in one and three-fourths cups of milk in a double boiler, first wrapping the moss in gauze. It should be flavored with vanilla and set aside to cool. It will be very thin when first taken from the fire, but when chilled it becomes firm.

Broths. The simplest and best way of making broth from any kind of meat is to add a pint of water to a pound of meat, and let it simmer on the back of the stove for about four hours. At the end of this time it can be strained and will form a jelly. This can be reheated and given as a liquid, or eaten cold as a jelly. When beef juice is ordered, it is better to buy a meat press for it. The meat is cut in strips and seared on a broiler, and the juice then squeezed out in the press. This beef must not be overheated or the juice will coagulate.

In preparing food for the invalid, the main points to remember are: Have all appointments spotless and well arranged; be punctual; have hot things hot and cold things cold; season daintily; vary the menus; and take care not to allow any untidiness in serving the meal in the sick room.

CHAPTER TWENTY-FIVE

ADMINISTERING MEDICINE

NURSING in one's own family is always a nervous strain, and this strain is increased by the uncertainty that our ignorance causes. This is true when the amateur nurse is called upon to administer medicines. After the doctor leaves she can think of so many things that she should like to ask him. How much shall the medicine be diluted? If one medicine is to be given every three hours and one every four hours, what shall she do when the two come together? How close to meal time may the medicine be given, and shall she awaken the patient when the hour for giving the medicine comes? These questions and others will be answered here, with the belief that such knowledge will help to make the work of the home nurse less trying.

Methods of administration. There are five ways of administering medicines: (1) through the mouth; (2) by inhalation; (3) by inunction or rubbing into the skin; (4) subcutaneously; and (5) through the rectum. These methods are varied according to the type of the case and according to the rapidity with which the medicines are to be absorbed.

Most medicines are given through the mouth unless there is need for immediate action. When given by this method they act rather slowly, although some are absorbed into the blood more quickly than others and thus are quicker in their effects.

Medicines given by inhalation reach the circulation quickly, and this method of administration is sometimes used where quick action is needed, particularly in diseases affecting the respiratory organs.

When medicines cannot be taken through the mouth and immediate action is not necessary, inunction is sometimes used. This is often done in the case of infants, who are rubbed with olive or cod-liver oil, and the same method is sometimes used with adults.

Medicines given subcutaneously are absorbed at once, and this method is used in cases where immediate stimulation or other prompt results are desired. They are given by hypodermic

syringe. In this method it is possible to be absolutely accurate in the dose given, as the entire amount of a medicine given in this way goes into the circulation, which is not the case in any of the other methods.

Medicines given by enemas are absorbed slowly, and much larger doses are necessary than when administration is through the mouth.

Time of giving medicine. All orders for medicines should be written, so that there may be no chance for a mistake in the quantity used; and the proper time for giving the medicine should be definitely stated and adhered to. The time chosen depends upon the effect upon the mucous membrane and the effect which it is desired to produce upon the patient.

Medicine to stimulate the appetite is generally given before meals. Alkalies, such as lime, potash, and magnesia, used to stimulate the gastric juice, are given before eating, but when used to neutralize the acidity of the gastric juices they must be given after eating. Acids, such as hydrochloric or muriatic, arsenic, bromids (when given regularly), and all irritating medicines, should be given from half an hour to an hour after meals. Laxatives to act slowly are given at night. Those given to bring quick results are given before breakfast or when the stomach is empty. Hypnotics are given at night, the hour depending upon the quickness with which the medicine acts.

Rules for giving and taking medicines. The following rules for the handling and use of medicines will cover most of the cases arising in an ordinary household:

(1) All drugs should be locked up where no one can get at them who does not understand medicines and their uses.

(2) Poisons and strong medicines should be kept separate from others. Poisons should be marked so as to be unmistakable. They may have colored labels or be kept in colored bottles, and an even better plan is to use bottles of a distinctive shape which can be recognized even in the dark. A death's-head label, if

large enough, is desirable. They should never be kept on the same shelf with any other medicine. The top shelf is the best place, for two reasons: it requires an effort to get at them, and they are out of the reach of children.

(3) Never take a medicine in the dark, however sure you may be that you know what is in the bottle. There is always the possibility of a mistake, or some one may have changed the bottle for another.

(4) Never use an unmarked medicine, either liquid or powder. If the label is lost, throw away the contents of the bottle or package. Many powders have practically the same appearance. Epsom salts and oxalic acid are easily mistaken for each other.

(5) Look at the label three times: first, when the bottle is taken from the shelf; second, as the medicine is poured out; third, when the bottle is returned to the shelf. It is possible for the eye to fail one so that the wrong bottle is picked up in a hurry. Pour out the medicine with the label up, so that while you are measuring you unconsciously see the name. Then, as you return the bottle to the shelf, again read the label. With care such as this there is little chance that a mistake will be made.

(6) Measure carefully and exactly. If the doctor has ordered a certain quantity of medicine, that is the dose he intends to be given, not a drop more or less. If the liquid is allowed to run over the edge of the spoon, it may increase the dose from a quarter to a half. If a solution has been prepared for a certain per cent of a grain to a teaspoonful, one may easily give double the amount. A graduated glass, or, if drops are to be given, a pipette, will make the measurement exact. Every household should have a measuring glass in the medicine closet. A teaspoonful is a very uncertain measurement, both because the size of the spoon may vary, and also because medicines measure varying quantities to a teaspoonful according to the viscosity of the liquid. A teaspoonful of sirup, for example, is larger than a teaspoonful of water. If minims are ordered, measure with a minim glass, as minims and drops

are not always the same. Always shake the bottle, for the sediment in the bottom is often the chief ingredient in the prescription, and if the liquid is poured from the top and later from the bottom without shaking, the strength of the medicine actually taken varies greatly.

(7) Do not buy medicines in large quantities. In many cases they change with time. Some may lose their strength, while those prepared with alcohol become more concentrated because of evaporation. Always recork the bottle securely to prevent evaporation.

(8) Give medicines at the hour ordered. The physician knows exactly how much of the medicine he wants the patient to get, and how soon it will be necessary to repeat the dose. If he orders it given every three hours, he means three hours and not three hours and twenty minutes. If a doctor orders, for example, a stimulant every three hours, he knows that at the end of the time stated the patient will need that medicine. If allowed to go without it beyond the time prescribed, the patient is weakened, and the medicine has extra work to do in overcoming the effect of the delay.

(9) If two medicines are to be given, be sure that they can be given at the same time. Some drugs are not compatible, and we should have clear directions from the doctor as to the possible necessity of an interval between the two. If, when they are mixed, a deposit is formed or the color changed, it is a sure sign that the two are incompatible.

(10) Acids and irons should not be allowed to touch the teeth. They should be given through a glass tube or paper straw put well back in the mouth, and the mouth thoroughly rinsed afterward. If this is done, there should be no injury to the teeth.

(11) When medicines are given to an unconscious patient, all powders and pills should be dissolved and dropped slowly and gradually, well back into the mouth.

(12) The dilution of medicines should receive careful attention. Cough sirups are taken undiluted. All irritating medicines, such

as acids, arsenics, and iron, should be well diluted. Saline cathartics are given as saturated solutions.

(13) Make medicines as palatable as possible. A medicine intended to be given hot should be hot, and one meant to be cold should be cold. When possible, the taste of medicine should be disguised, especially with children. Castor oil is practically tasteless if a piece of ice is held in the mouth before it is taken and the oil and spoon used in giving it are cold. Another method of administering it so that the taste is not detected is by putting it in a glass of soda water flavored with sarsaparilla, lemon, or orangeade. In preparing castor oil with soda water, be careful not to daub oil on the edge of the glass. Have the contents of the glass cold, and put in an abundance of the flavoring. Medicines can often be given in capsules instead of in powders. It is not wise to give medicine to children in milk or food, as it may make them dislike the food so that they will refuse it later.

(14) Medicine should not be given with food which lessens the effect or has a bad influence. Calomel, for example, should not be given with milk or eggs, or with salt food. Iodids should not be given with starchy food. If the doctor does not give directions on this point, make sure by asking him.

(15) When a medicine is to be continued for a long time, understand the adverse symptoms which may be expected from its use. It is not necessary to tell these to the patient, who might through nervousness imagine or exaggerate the sensations produced. Many medicines are cumulative in their effects; that is, as they are given day after day, the effect upon the system becomes greater and greater until poisoning may result. Examples of this are found in medicines containing strychnin and arsenic. Ask the doctor to explain exactly the symptoms which will indicate the time for stopping the medicine or, on the other hand, the necessity of reporting to him.

(16) It is a good plan to fasten on the door of the medicine closet, with thumb tacks, a list of the medicines to be found in it,

and whatever simple directions may be needed by any one needing medicines in a hurry. The medicine closet should be kept in scrupulous order, with the bottles all in their own places and set so that the labels, so far as possible, can be easily seen. The closet should be placed where a light can easily be thrown into it. Another wise plan in some households would be to keep in the closet, or fastened to the door, a list of simple remedies which are not medicines.

(17) When a patient is extremely ill, medicines, particularly stimulants, should be given as regularly through the night as through the day. As the patient becomes convalescent, the night doses may be omitted; but it is best for the amateur nurse to have the permission of the physician before omitting a stimulant. A patient is of course not awakened for a sleeping medicine.

Taking patent medicines. There are few greater evils in the world than that of taking patent medicines. There are laws in the United States which control the sale of these medicines and require the manufacturers of those containing poisonous or injurious drugs to print upon the labels the contents of the bottle; but there are so many ways of evading the law or of making the labels confusing that many persons take these medicines, knowing little of the contents and nothing of their effect. The safest plan is not to take patent medicines at all.

One serious consequence which may follow the taking of patent medicines is the forming of a drug habit. Much has been written on the danger of forming habits by the taking of morphin or other forms of opium, cocain, or other well-known drugs; but few realize that habits can be formed by taking other medicines besides these. One of the worst cases of medicine habits I have ever known was one of trional, a medicine which is given freely by physicians and taken freely by the laity. Other drugs, such as phenacetin, aspirin, strychnin, veronal, calomel, and coca-cola, are taken too freely by many who know nothing of their effects upon the system or of the danger of forming a habit by their use.

Taking medicine for insomnia. Most of the drug habits are formed in trying to break up insomnia. There are so many simple ways of helping to bring on sleep that all other means should be tried before resorting to medicines, and these should never be taken except under the advice of a physician. Frequently the physician can relieve even long-standing cases of insomnia by simple means. Sometimes the trouble is in the digestion; sometimes it is caused by nervous strain, overwork, or lack of exercise or fresh air.

Many persons exaggerate the amount of sleep they lose. If they would stop and calculate the number of hours they sleep, though apparently awake half the night, they would often find that they had slept almost as much as the ordinary person, though apparently awake much of the night. There is perhaps a wakeful time in the middle of the night, but they sleep when first in bed and in the morning, and really get almost as much sleep as they need. The dread of insomnia is more a matter of nervousness than anything else, and we really exaggerate to a large extent its real effects.

Taking another's prescriptions. Never take another person's prescription, for, although you may be sure that you know the effects of the medicines included in it, there may be something in your physical condition (for instance, in the condition of your heart or kidneys) of which you do not know, which may cause a medicine that has been prescribed for some one else to be injurious to you. Never buy medicines from a drug store and take them without knowing the contents. Most headache medicines and medicines for colds contain derivatives of coal tar. All of these are very depressing to the heart, and many cases of heart failure have followed the taking of headache medicines. Medicines for colds contain also camphor and other drugs, which, taken freely, may cause convulsions or other complications.

CHAPTER TWENTY-SIX

COMMON EMERGENCIES

THE greatest test of a nurse, trained or untrained, is her ability to meet the unexpected; and the very first thing she must remember is to keep cool, to be quiet and apparently deliberate in her movements. If you have ever seen a good nurse meet an emergency, you may, perhaps, have wondered how it was possible for her to be so little excited when all around were rushing about and asking questions, and you may have even felt irritated with her for the little interest and sympathy which she seemed to be showing. But yet it was she who relieved the patient and quieted the friends, and it was because of her calmness that she was able to think quickly and do that which needed to be done.

Unconsciousness. Unconsciousness is one emergency that frequently has to be met, and it is best to be somewhat sure of the nature of the attack before giving a treatment.

Sudden unconsciousness may mean fainting, apoplexy, poison, intoxication, convulsion, hysteria, or an epileptic attack. Intoxication may be detected by the breath, and one should be sure not to mistake a case of apoplexy for one of intoxication, for the result of such a mistake may be serious. If there are no symptoms of poisoning, follow this general rule: If the patient is pale and weak, lay him down flat or with head lower than the rest of the body; if the face is red and the pulse full, place a pillow under the head and apply ice or cloths wet in cold water to the head, and do not give a stimulant.

Fainting. Fainting is caused by a diminished amount of blood in the brain. It may be due to fright, a shock, or anything strongly affecting the nervous system, or it may be caused by weakness from hunger or overexertion. Some persons faint easily, at the sight of blood, from nausea, or from the close air of a crowded room, and in some this tendency is constitutional. In such cases no very great alarm need be felt, as the consequences of the fainting fit are not serious. Hysteria sometimes produces a successful

imitation of fainting, although it is a great mistake to assume that one can always control a faint feeling by the will. In a true faint there are unconsciousness, paleness, relaxed muscles, and a weak and rapid pulse. In hysteria there is not unconsciousness, the face may be flushed, the pulse is not weak, and if you try to lift the eyelids they will resist.

An approaching fainting fit may sometimes be warded off by leaning over and putting the head down, or lying down, so that the blood may return to the brain. The patient should lie flat, with the head as low as the body, or lower. The clothing, especially at the throat, should be loosened, and people should not be allowed to crowd around. Cold air or cold water on the face and rubbing the hands, arms, and legs help to restore circulation. Smelling salts and ammonia may be put to the nose, but this must be done carefully so that the nose and throat will not be irritated. The patient should remain perfectly quiet and receive a stimulant as soon as possible.

Hysteria and its treatment. To be subject to attacks of hysteria is very distressing, and while there are women who work themselves into this condition to attract attention, physicians now recognize that tendency to hysteria may be a real disease and a most distressing one. There is often a physical cause for such attacks. One should be patient and kind in dealing with a nervous person, but at the same time firm and unyielding, and it is sometimes best to ignore the attack entirely. Fresh, cold air on the face, a dose of aromatic spirits of ammonia, or a drink of cold water may aid the patient to regain self-control. Holding the patient's hand, or pressing her arm quietly and firmly, may also be a help. Never argue with such a patient, but be quiet and controlled and thus make her feel your strength and desire to help her.

Hysterical patients are sometimes cured by providing them with some real interest which enlists their attention, either temporarily or permanently. They should be led to think of some-

thing besides themselves and not to dwell upon their own sensations. Hysterical patients have been known to simulate successfully nearly every known disease, sometimes with such accuracy as to deceive physicians. On the other hand, the nervous system may be really affected in some obscure way which presents the appearance of hysteria. In either case the first necessity is firm and quiet strength in the nurse and wholesome conditions and occupations to restore the patient's vitality.

Shock. An injury, severe or slight, may be followed by the condition known as *shock*. I have seen children in this condition after a slight fall when they were practically uninjured. It is often spoken of as "collapse," and the symptoms are somewhat like those of collapse in disease.

In a condition of shock, the face is drawn and pinched, the skin cold, the pulse very weak, sometimes not to be felt at all at the wrist, and the patient is often unconscious. With children there may be vomiting.

The treatment is to stimulate with heat, and unless there is unconsciousness, to give stimulants such as aromatic spirits of ammonia, one half to one teaspoonful in one fourth to one half glass of water. If there is unconsciousness, an enema of coffee may be given. Rub the arms and legs to improve the circulation, but keep the patient as quiet as possible and do not uncover him. In an emergency hospital, beds with warm, thick blankets to be placed next to the patient are kept ready for accident cases, and as soon as it is known that a patient is coming, hot-water bags are put into the bed so that it will be warm.

Convulsions. Children are more subject to convulsions than are adults. Indigestion, teething, constipation, and other slight ailments may be accompanied by convulsions, because the nervous system is affected. Convulsions sometimes come at the beginning of a contagious disease. The first symptom of a convulsion is likely to be a twitching of the muscles of the hands and face, and rolling of the eyes. In a convulsion of this nature the child then becomes

unconscious and its body stiffens. The pulse is weak, the respiration rapid, and the skin wet and clammy.

The quickest remedy is a hot bath, or, better still, a hot mustard bath. Be careful in preparing the bath not to have the water too hot. It should be 110°F . If you do not have a thermometer, hold the elbow in the water long enough to be sure the temperature is not too high. The proportion of mustard to use in a mustard bath is one tablespoonful to about a gallon of water. If the mustard is first mixed with a small quantity of cold water, it will dissolve more easily, and this in the end saves time. The hot water should begin to act with quieting effect in a few minutes, but the bath may be continued for from ten to twenty minutes, adding hot water gradually to keep the temperature even. If there has been constipation, it is well to wash out the bowels to relieve the pressure there. If this is done at once when the restlessness and twitching of the muscles are observed, an attack is sometimes warded off. The child often goes to sleep just after the attack, and there should be perfect quiet, as a sudden noise may cause a return of the convulsion.

Convulsions in an adult. Aside from hysteria, the two causes that predispose to convulsions in an adult are epilepsy and uremic poisoning.

In an epileptic fit the patient falls down suddenly, giving a sharp cry; his body twitches violently and he sometimes foams at the mouth. The fit lasts only a few minutes, and nothing need be done except to loosen the clothing, move away anything which may cause him to hurt himself, and put something between the teeth to prevent biting the tongue. The best thing for this purpose is a wad or roll of muslin, such as a large handkerchief. In putting it in the mouth be careful not to get your fingers between the teeth. After the attack the patient becomes conscious, and will often sleep for some time.

Uremic convulsions indicate diseased kidneys, and are caused by the retention in the system of the waste products which are

eliminated by the kidneys when in a healthy condition. The convulsion is severe, and is followed by unconsciousness. The patient should be put to bed, covered well, and kept warm with hot-water bags around her; and as this is a dangerous condition, a doctor should be called at once. There are often premonitory symptoms before an attack of this kind. When nursing a case of Bright's disease, watch for these symptoms and if possible ward off the attack. The indications of its approach are headache, vomiting, and drowsiness, and they can sometimes be relieved by giving hot packs or steam baths. It is best to have clear directions from the doctor so that you will know exactly what to do in such an emergency.

Sunstroke. Extreme heat either in the sun or in the house may cause sunstroke. Heat accompanied by moisture is most likely to cause it. Rider Haggard records the case of a woman who had lived without injury for years in India, but who had a sunstroke on a farm in Norfolk. In certain tropical climates, such as Porto Rico, where there is little moisture in the air during the hot season, sunstroke is unknown.

The symptoms of sunstroke are unconsciousness, dry and hot skin, flushed face, a slow, full pulse, and labored breathing.

Remove the patient to a cool place, apply cold wet cloths or ice to the head and face, and if possible immerse the patient in a cold bath or use a cold pack. When the patient is conscious, give cold water to drink, but do not use stimulants.

Heat exhaustion. Heat exhaustion is caused by the same conditions as sunstroke, but the symptoms and treatment are quite different. There is great weakness but no unconsciousness, the face is pale and wet with perspiration, the pulse weak and rapid, and the breathing shallow.

Remove the patient to a cool place and loosen the clothing, but do not apply cold externally. Give cool water in moderation, and such stimulants as tea, coffee, or one half to one teaspoonful of aromatic spirits of ammonia in one fourth to one half glass of water.

Concussion of the brain. A fall or heavy blow on the head is sometimes followed by concussion of the brain. The patient lies motionless, apparently in a heavy sleep, and if aroused falls back into the same condition. Treatment consists of laying the patient on the back with the head slightly raised, and applying a hot-water bag to the feet if they are cold. Hot drinks may be given, but not alcohol in any form; and there should be absolute quiet. This unconsciousness may last for hours without bad results, *but a physician should be called*, as there is always the possibility that there may be a fracture of the skull or more injury to the brain than appears at first. Sometimes in such cases a blood clot forms on the brain and only quick work by a surgeon can prevent serious consequences.

Gas poisoning. In unconsciousness due to poisoning from illuminating gas there is no difficulty in recognizing the cause, as the gas will fill the room where the patient is found. Carry the patient into the fresh air, loosen the clothing, and give artificial respiration, at the same time rubbing briskly on the bare skin. Clean the mouth out, pull out the tongue, and hold ammonia to the nostrils, being careful not to choke the patient with the fumes. When consciousness returns, give a stimulant, wrap a blanket around the patient, and if necessary apply heat. If there is not unconsciousness, the patient may be taken into the fresh air, walked up and down, and given small doses of aromatic ammonia at intervals of twenty minutes or half an hour.

Recently there have been many cases of poisoning in automobile garages by carbon monoxid, the dangerous constituent of illuminating gas. This gas is formed by the incomplete combustion of the gasoline in the cylinders of the engine. It gives no warning of its presence, as it is odorless and tasteless. To avoid danger from it, a gasoline engine should not be run in an inclosed room unless an exhaust is provided for the waste gases. Any one overcome in a garage should receive the same treatment that is given for poisoning with illuminating gas.



FIG. 63. Draining the water from the lungs.

Restoration of those rescued from drowning. As soon as a person is drawn out of the water, the clothes should be loosened and she should be turned face downward with the head low, to allow the water to run out of the lungs. If laid over a barrel or log, or over a pile of sand, lumber, or clothes, the body can be elevated while the head is low. If nothing of this kind is near by, the patient can be lifted by placing the hands under the abdomen or she can be laid over the knee of one of

the rescuers. Clean out the mouth and throat, remove false teeth if there are any, and grasp the tongue to prevent it from falling back into the throat; if necessary it can be tied with a cloth, or if a long pin is thrust through the tongue the pin will rest against the teeth and keep the tongue out. Give artificial respiration and go on with it for hours, even if there is no apparent sign of life. Apply heat to the body and rub the arms and legs. When consciousness returns, so that the patient can swallow, give hot drinks such as hot coffee, tea, lemonade, ammonia, or even hot water.

Artificial respiration. There are several methods of giving artificial respiration, but whatever method is used, certain procedures are the same: the mouth must be held open and a small object like a folded handkerchief should be put between the teeth; the tongue should be pulled well out of the mouth; and all movements of artificial breathing should be given at about the rate

of rather slow breathing (fifteen to eighteen movements to the minute).

The Schäfer method, devised by Professor Schäfer of Scotland, is most often used now. It is used in the English army, and has been recommended by the American Medical Association as simple and effectual. In this the patient is laid chest downward, with his head low and his face turned to one side. The operator kneels at the side of



FIG. 64. How the tongue can be fastened to prevent its falling back into the throat.

the patient, or places himself astride of him, with his face toward the patient's head. The operator's hands are placed on each side of the patient's back just over the muscles of the small of the back, and the spread fingers over the lower ribs. Then he sways his body slowly forward, pressing down with his hands on the body of the patient. After holding this position for about two seconds he sways backward, releasing the body from pressure but not removing his hands. In this way the air is pushed out of and drawn into the lungs of the patient. The treatment should be given at the rate of about fifteen movements to the minute and should be continued until the patient breathes well—if necessary, for two or three hours. It should be begun at the earliest possible moment after the person is taken out of the water, as the important thing is to get oxygen into the blood at once.

The Sylvester method is not often used now after drowning, but is convenient for use if breathing stops during an operation, when, of course, it may not be possible to turn the patient on his face. It is the same in the beginning as all other methods: the clothing is loosened, the mouth opened, the tongue is pulled out and tied,



FIG. 65. The Schäfer method of artificial respiration. The operator's hands are placed on each side of the patient's back, with the fingers spread over the lower ribs.

and the body rolled over some object that will place the head low enough for the water to drain from the lungs. After the water has stopped running from the lungs the patient is laid on his back, and a roll of clothing or something of the kind put under his neck so that his head will fall backward. Kneeling at the patient's head, grasp the forearms just below the elbows and fold his arms down across the lower ribs. Then raise the arms up over his head, and bring them down again to his sides, making pressure again over the ribs. Continue slowly raising and lowering the arms, pressing upon and opening out the lungs with a bellowslike movement until natural breathing begins again. After the patient is breathing, wrap him in a warm blanket, rub his arms and legs to restore circulation, apply heat if necessary, and give him aromatic spirits of ammonia, well diluted.

The method which I have found most practicable in giving artificial respiration to infants is the following: Take the infant, back down, in the two hands, the left hand supporting the shoulders and head, with the little finger under the left arm, the thumb under



FIG. 66. After pressing downward on the body of the patient for about two seconds, the pressure is released but the hands are not removed.

the right arm, and the other fingers under the head. With the right hand support the buttocks and legs. Bring the two hands toward each other, doubling the infant in the middle of its body, then separate the hands until the infant's body is slightly curved backward (Fig. 69, page 206). As in other methods, the mouth must first be cleansed of all foreign matter and the tongue held well out of the mouth, and the movements should not be given too rapidly.

Croup. An attack of croup is alarming but seldom dangerous. It begins with a loud cough; the face becomes blue, and the child struggles for breath. Hot cloths around the throat often give relief. It is well to give an emetic, and if the child is subject to these attacks a bottle of sirup of ipecac should be kept in the house. The dose is one teaspoonful. Croup kettles are found efficacious in many cases. Allowing the child to breathe in steam from an inhaler or a pitcher of hot water helps to loosen the phlegm, but care must be taken to prevent a burn.



FIG. 67. The Sylvester method of artificial respiration. Raise the arms over the patient's head.

Colic or cramps. Colic is caused by an accumulation of gas in the intestines, usually from undigested food, but sometimes from a sudden chill or an obstinate attack of constipation. A mild attack may be relieved by drinking hot water with or without a little soda, by soda mint tablets, by a few drops of peppermint, or by an application of heat.

Clearing out the bowels with an enema followed by a quick cathartic will give more permanent relief. The attack may be so severe as to be dangerous, and in such a case a doctor should be sent for at once. Cloths may be wrung out of hot water and put on the abdomen. It is best to wash out the bowels instead of giving an enema, not injecting too much water at a time; apply heat to the feet and keep the patient well covered, as there is often shock in these cases. A long rectal tube should be used in giving the injection, but if one is not at hand, use a short nozzle. In the meantime send for a rectal tube and repeat the treatment if the first one has not given relief.

Vomiting. When vomiting is due to indigestion, it is best not to check it until the stomach is empty. Drinking a glass of luke-



FIG. 68. Then bring them down again, making pressure over the ribs.

warm water will help to clear out the stomach. If the paroxysm is very severe and there are signs of exhaustion, or if an operation is followed by vomiting from nervousness, it is best to check it. This may be done by applying a mustard plaster or mustard leaves over the stomach, bathing the face and throat in cold water, feeding small pieces of ice, laying cloths wrung out of ice water around the throat, or giving salts or vinegar to smell. Sometimes persistent vomiting can be stopped by turning the patient face downward, with a doubled-up pillow under the abdomen, the head low and the body on an incline.

Hiccoughs. A hiccough is a spasmodic contraction of the diaphragm — the muscular partition lying between the chest cavity and the abdomen. It is caused by indigestion, or by over-eating or overdrinking. Taking a deep breath and holding it sometimes gives relief. A sudden fright or startling noise, drinking a glass of water while holding the breath, or lying on the face in the position used to check vomiting, also may give relief. It is best to stop hiccoughs immediately on their appearance if possible, as the longer the attack continues the more obstinate it is likely to be.

Retention of urine. When the urine is secreted by the kidneys but not passed from the bladder, the condition is called *retention*

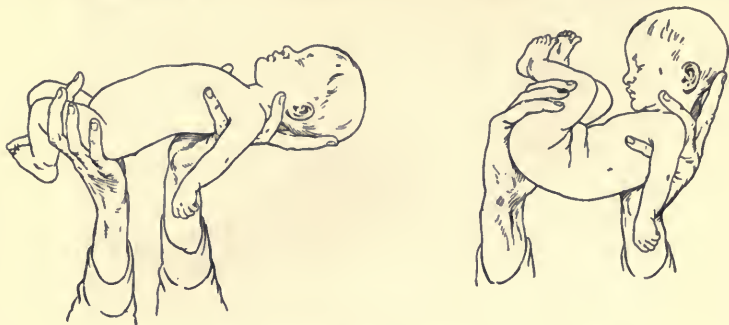


FIG. 69. Administering artificial respiration to an infant.

of urine. This may occur after an operation, or when the patient suffers from shock. In young girls and boys it is a form of nervousness or hysteria, sometimes caused by retaining the urine for a long time without the opportunity of passing it. Sometimes it is caused by difficulty in using a bed pan. Heat applied over the bladder by means of hot cloths or hot-water bags will sometimes start the flow. Hot water in the pan or vessel to be used, or running water from the faucet or from one pitcher to another, may help. Pouring warm water over the pubic region, or a hot hip bath, may give relief. If these remedies fail, it may be necessary to draw the urine with a catheter, but this should never be done except by a doctor or nurse. If it is not properly done, there is danger of causing irritation of the entrance into the bladder or of carrying infection into the bladder itself.

Food poisoning. Food poisoning, often called *ptomain poisoning*, is caused by eating foods infected with certain kinds of bacteria. Meat and vegetables that have been canned without thorough sterilization may be infected with the germ. As cooking destroys the toxin from the germs, the danger from ptomain poisoning is much less if all canned goods are cooked before using.

The symptoms of food poisoning are violent nausea, severe pain in the abdomen, and acute diarrhea. There is frequently great prostration and weakness; therefore we must guard against these, stimulating and keeping the patient warm. Castor oil or Epsom salts can be given to hasten the expulsion of the poison from the intestine. It is best to call a doctor promptly, so that more severe remedies may be promptly used if necessary.

Unless we are sure of the cause of the attack, the patient should be examined for symptoms of appendicitis; and the earlier in the attack the doctor is called, the more favorable the prognosis.

CHAPTER TWENTY-SEVEN

WHAT TO DO IN CASE OF POISONING

IN no cases of emergency work is there a greater need of knowing what to do than in poisoning. It is impossible for any one to remember exactly the antidotes for all poisons; but with a general knowledge of the first steps to be taken, much can be done to relieve the patient before the coming of the physician. Where a physician is hard to reach, a "First Aid to the Injured" book, containing suggestions for antidotes, should be kept at hand and the nurse should be able to begin her work without delay.

When to suspect poisoning and what to do. In cases of sudden illness or unconsciousness, we should suspect poison. As a rule, a suicide tells what he has done as soon as the medicine begins to affect him. If the patient is a child, or the medicine has been taken by accident, the bottle or box may usually be found and so we can learn what poison has been taken.

A doctor should be summoned immediately and told *why he is needed*, and if you have been able to discover the nature of the poison he should be told this also. The poisons most frequently taken are opium preparations, carbolic acid, bichlorid of mercury, and arsenic.

Do not wait for the doctor's arrival, but begin treatment at once. (1) Rid the system of the poison. (2) Neutralize the effects with an antidote. (3) Stimulate the patient. (4) Soothe the digestive organs.

Emetics. The stomach should be cleared of the poison either by an emetic or by some mechanical means for causing vomiting, such as sticking the finger down the throat and tickling the back of the throat. Emetics easy to obtain are mustard water (one teaspoonful of mustard to a cupful of water), soda in water (two tablespoonfuls of baking soda to a quart of water), salt and water, or merely a large quantity of warm water. These emetics are more effective if given warm than if they are either cold or hot. Ipecac is a simple emetic which it is well to keep in the house;

the dose is one to two drams. Apomorphin, a drug which is an emetic, is given hypodermically. It is always carried in the physician's and nurse's medicine cases.

When not to use emetics. In the case of poisons like strong acids or alkalies, or other poisons which injure the mucous membranes, emetics should not be used. Instead give milk, raw eggs, boiled starch, flour and water, barley water, or mashed potatoes, which are soothing to the mouth and stomach and help to prevent the absorption of the poison. Oil is not always to be used, as it quickens the absorption of some poisons.

Antidotes. An antidote is something that counteracts the effect of a poison. For instance, the antidote for an alkali is an acid, such as lemon juice or vinegar. To counteract acids, give lime-water, baking soda, plaster, or tooth powder. After the antidote give an emetic, unless the nature of the poison makes the use of an emetic unadvisable.

Bichlorid of mercury poisoning. This preparation of mercury is used a great deal in disinfecting. For this reason it is easy to obtain. The death following bichlorid of mercury is exceedingly painful, as it is frequently slow in its effect, stopping the secretion of urine in the kidneys and causing great agony. The symptoms of mercury poisoning are white and swelled mucous membrane, pain in the abdomen, nausea with vomiting, and bloody movements from the bowels. The skin is cold and clammy and the patient much prostrated and frequently in convulsions. The treatment is first to give white of egg or flour and water and soothing liquids, such as milk. Emetics should then be given. Treat *poisoning by calomel and blue mass* like bichlorid poisoning.

Opium poisoning. Among the common opium preparations are :

Laudanum or tincture of opium, dose four to ten drops.

Dover powders, dose eight to ten grains.

Paregoric, dose one to four drams (teaspoonful).

Heroin, dose one half to one tenth of a grain.

Morphin, dose one sixteenth to one fourth of a grain.

Morphin is an active principle of opium. The passing of the Harrison law makes it much harder to obtain morphin and is materially decreasing the number of cases of morphin poisoning. Heroin is a compound made from morphin and is a dangerous habit-forming drug. Opium is found, too, in many patent medicines the sale of which has been stopped by the Harrison law.

The symptoms of opium poisoning are drowsiness, unconsciousness, pulse fast and then weak, breathing very slow and shallow, face flushed (almost purple). The pupils of the eyes are contracted and do not dilate when exposed to the light.

The treatment consists of an emetic, followed by a stimulant, preferably coffee, which not only helps the heart action but aids in keeping the patient awake. Do not allow the patient to go to sleep; if necessary, walk him up and down persistently, slap him, use any means to keep him awake, but be careful not to exhaust his strength. If the breathing becomes too shallow, give artificial respiration (page 200) as long as the acute symptoms are present. Vomiting should be continued to keep the stomach empty, as opium is absorbed from the stomach and returned to it even when taken by hypodermic. The patient should be kept warm, as the temperature is likely to be low.

Carbolic acid poisoning. The common use of carbolic acid or phenol in disinfecting makes it easy to obtain. Thus it is one of the most common poisons used by suicides. It is easy to detect, as the odor is noticeable and the mucous membrane of the mouth and throat are burned. The treatment begins with the rinsing of the mouth with alcohol and giving alcohol internally, using either brandy or whisky, one tablespoonful of pure alcohol (not wood alcohol), or wines. The antidote is Epsom salts, one to two or three tablespoonfuls. Limewater and milk in equal parts, flax-seed tea, or raw eggs may be given; neither oil nor glycerin should be given, as they quicken absorption of the acid. Urine should be passed if possible; the patient should be kept warm and stimulants used if necessary.

Creolin, lysol, and Dobell's solution are compounds made from carbolic acid, and the symptoms and treatment are the same as in carbolic acid poisoning. Creosote is another of these compounds, but it is seldom taken in poisonous doses.

Arsenic poisoning. The preparations of arsenic are :

Fowler's solution, dose three to five drops.

Donovan's solution, dose three to five drops.

Arsenic is also found in salvarsan, Paris green, and rat and vermin poisons.

The symptoms of arsenic poisoning are pain in the stomach and abdomen, vomiting, intense thirst, bloody movements from the bowels, rapid, weak pulse, clammy skin, and sometimes unconsciousness.

The treatment begins with an emetic if there has been no vomiting. Then give milk, white of egg, or flaxseed tea. If the bowels have not moved, give castor oil. Watch the urine, as its secretion is sometimes lessened or stopped.

Strychnin. The preparations of strychnin, which is the active principle of *nux vomica*, are :

Tincture of *nux vomica*, dose ten to twenty drops.

Strychnin sulfate, dose one sixtieth to one twentieth of a grain.

Sirup of iron, quinin, and strychnin, dose one to two drams.

The symptoms of strychnin poisoning are restless excitement followed by convulsions, in which the legs become rigid, the arms bent, the hands clenched, the eyes open and staring, and the mouth fixed in a characteristic grin. After the convulsion the body relaxes, but the slightest touch or noise will cause another attack.

The treatment consists of an emetic, strong tea for the tannic acid contained in it, and charcoal. The patient should be kept perfectly quiet. The bladder must be kept empty, as the drug will be reabsorbed from the urine if this is not done.

Phosphorus. The preparations of phosphorus are :

Sirup of hypophosphates, dose one to two teaspoonfuls.

Hypophosphate of iron, potassium sodium, and calcium; dose ten grains.

Phosphorus is found also in matches, rat poison, and vermin powders and pastes.

The symptoms of phosphorus poisoning are severe pain in the stomach, and vomiting of material which is luminous in the dark. There may be fever, bleeding from the nose, or convulsions.

Give an emetic and clean out the bowels with Epsom salts, one half ounce in a tumbler of water, or magnesia; soothe the digestive organs with liquids such as milk or flour paste. Use no oils, fats, or stimulants.

Aconite. Tincture of aconite contains this drug; dose, three minims.

The symptoms are irregular pulse; slow, shallow, and weak respiration; anxious expression with eyes glaring, dilated, and protuberant; sometimes convulsions.

Give an emetic, also strong tea; apply heat; give artificial respiration if necessary and keep the patient quiet, with the head low.

Alcohol. The symptoms of alcohol poisoning are excitement followed by coma, irregular and stertorous respiration, flushed face, pulse rapid and hard, and breath smelling of alcohol.

Apply heat to the feet, cold to the head, and guard against heart failure. For stimulants give hot coffee or aromatic spirits of ammonia, one teaspoonful in a half glass of water.

Atropin. This is contained in atropin sulfate; dose one sixtieth of a grain.

The symptoms are dryness of the throat, difficult breathing, dilated pupils, flushed face, restlessness, delirium, and sometimes convulsions.

Give an emetic of warm water; stimulate if necessary and give artificial respiration. The bladder should be emptied frequently, as the medicine reabsorbs. Apply external heat, perhaps a mustard bath, and put hot and cold applications to the head.

Belladonna. Ointments and liniments often contain belladonna, as do atropin and hyoscyamin.

The symptoms are dryness of the mouth and skin, a rash like that of scarlet fever, dilated pupils and staring eyes, headache, restlessness, and delirium.

Give an emetic and a hot mustard bath; apply cold to the head; give artificial respiration if necessary; and watch the urine.

Camphor. Found in spirits of camphor, cough mixtures, and liniments.

The symptoms are excitement, giddiness and headache, pain in the stomach, delirium and convulsions, small weak pulse followed by collapse.

Give an emetic, apply heat, and give stimulants.

Chloral. Somnol and chloral hydrate contain this drug. The dose is five to twenty grains or fifteen to thirty drops.

The symptoms are slow and shallow respiration; pulse first slow, then rapid, weak, and thready; there may be unconsciousness, with the muscles relaxed.

Give an emetic; use alcohol and hot coffee as stimulants; give a mustard foot bath; apply heat and treat with electricity. Be careful not to exhaust the patient.

Chloroform. The symptoms are irregular pulse and respiration; the latter may at times stop; the pupils are dilated.

Give artificial respiration, putting the feet higher than the head; stimulate, apply heat, and watch to see whether urine is suppressed.

Cocain. The symptoms are nervousness, irritability, wakefulness, nausea, vomiting, and convulsions. The skin is pale; the pulse rapid at first, but later slow and weak. Respiration is first quick and then slow and labored.

The treatment is to empty the stomach, apply heat, and give stimulants.

Digitalis. Infusion, dose one to two drams; tincture, dose five to twenty drops; fluid extract, two to four drops.

The symptoms are: pulse slow, irregular, and weak; headache, paleness, eyes prominent, respiration rapid, with great prostration, possibly convulsions.

Give tepid water as an emetic. The antidote is strong tea, for the tannin contained in it. Give strychnin as a stimulant, and keep the patient quiet and lying down.

Hyoscyamus. This drug is found in: fluid extract, dose one to three minims; tincture, dose ten to twenty minims; and hyoscin hydrobromid, dose one hundredth to one fiftieth of a gram.

The symptoms are thirst, dilated pupils, and unconsciousness or delirium.

Give an emetic and hot baths; apply cold to the head; and if necessary give artificial respiration. Watch the urine.

Iodin. The preparations of iodine are potassium iodid, dose five to thirty drops, and tincture of iodine for external use.

The symptoms are pain and burning in the stomach and abdomen, vomiting and purging, and dark stains in the mouth and on the lips.

First give a paste of water mixed with flour or starch, then give an emetic, and apply heat. Stimulate if necessary.

Lead. Lead is found in sugar of lead, dose one half to two grains.

The symptoms of poisoning are dry throat, a metallic taste and thirst, colic, cramp in the legs, sometimes convulsions, and a dark line on the gums.

The treatment is white of egg and one or two or three tablespoonfuls of Epsom salts or magnesia, an emetic, soothing drinks, stimulants, and application of heat.

Mushroom poisoning. The symptoms may appear immediately or not until hours after the mushrooms have been eaten. Nausea, vomiting, colic, diarrhea, weak pulse, labored breathing, and profuse perspiration are the earlier symptoms. Later there may be muscular weakness, collapse, and sometimes paralysis.

The treatment consists of emetics, large doses of castor oil, heat applied all over the body, and stimulants.

Oxalic acid. This is found in the form of oxalic acid crystals which may easily be mistaken for Epsom salts. It is used for removing stains.

The symptoms are burning of the mucous membrane, abdominal pain, cold livid skin, irregular pulse, stupor, collapse, and sometimes convulsions.

Give oil, milk, white of egg. The antidote is chalk or lime. Give stimulants and apply external heat.

Potash. The common preparations of potash are: chlorate of potash, dose ten to thirty grains; cyanid of potassium, one tenth to one twelfth of a grain; cream of tartar (potassium bitartrate), dose 10 to 60 grains; saltpeter, dose two to ten grains; caustic potash, used only externally.

The symptoms of potash poisoning are acute inflammation in the alimentary canal, pain, nausea, vomiting and loose dysenteric stools, a weak rapid pulse, shrunken face, cold skin, and unconsciousness. Death may occur with great suddenness.

The general antidotes are dilute vinegar, lemon juice, or cider. Give also oil, barley water, flaxseed tea, milk, white of egg, or gruel, to allay the irritation of the mucous membrane and keep up the strength.

Chlorate of potash is particularly dangerous to children and should not be used by them as a gargle. The acute symptoms of poisoning by this preparation are: vomiting, diarrhea, breathlessness, cyanosis (blue discoloration of the skin), urine dark and diminished in quantity or perhaps suppressed. Subacute symptoms are headache, loss of appetite, and pains in the abdomen and other parts of the body.

Cases of poisoning by cream of tartar are rare, but have been known, when a tablespoonful or more has been taken. The symptoms are stomach and intestinal troubles.

Saltpeter poisoning causes burning pain in the throat and

stomach, bloody movements from the bowels, fainting, collapse, and sometimes convulsions.

Cyanid of potassium poisoning is indicated by giddiness, faintness, difficult breathing, a weak small pulse, insensibility, and loss of muscular power. The eyes are protruding and shining, and there is an odor of acid on the breath.

There is but little time for treatment. The antidote is a weak solution of sulfate of iron. Cold water should be applied to the head and spine. Give artificial respiration, and go on with it as long as there is any sign of breathing. Give inhalations of ammonia and stimulate with alcohol.

Caustic potash poisoning is indicated by corrosive burns upon the lips or mouth, bleeding and sloughing of the mucous membrane, and vomiting of shreds of membrane and blood.

Prussic acid (hydrocyanic acid). The symptoms of poisoning and the treatment are the same as for poisoning by cyanid of potassium, and like the latter, prussic acid acts very quickly. A strong odor of peaches may be detected where this acid has been spilled.

Wood alcohol (methyl alcohol, wood naphtha). The symptoms are headache, nausea, violent vomiting, collapse, and possibly convulsions. The pupils are dilated, and there are profuse perspiration and great excitement.

Give an emetic, apply heat, and stimulate.

Some dangerous poisons are used in photographic work, and care should be taken to keep them out of the way of children. Poisonous fly paper or fly poison should not be used where children can get at them. Paint is often poisonous, and some people are upset merely by the smell of it if much painting is going on. Some cleaning preparations are poisonous. There are people who have the dangerously careless habit of using old bottles without removing the original labels. This should never be done. A rule in every household should be that nothing whatever in the way of a drug, medicine, powder, or extract should ever be left unlabeled. It is better to take a little extra trouble than to risk death by poison.

CHAPTER TWENTY-EIGHT

COMMON INJURIES

THE importance of understanding the treatment of common injuries lies in two facts: (1) Such injuries often demand immediate attention in a place where no doctor can be had; and (2) the consequences of a neglected injury, even though it may appear to be a slight one, are often serious. Even when no disastrous results are to be feared, the discomfort and annoyance of a small injury may be very considerable, and it is well worth while to study how to avoid them. In most cases no medicine is needed, and an intelligent amateur may be of great service in caring for the injury. It is important also to know when to call the doctor, and when the injury is really a slight one, especially with such injuries as burns or scalds.

Burns and scalds. A burn is an injury made by dry heat, while a scald is one inflicted by steam, hot water, or oil. Burns and scalds are divided into three classes according to the degree of injury:

(1) Burns which merely redden the skin. In a burn of this kind there is no danger unless a large part of the body is injured, but it is quite painful. Plunge the burned part immediately into cold water; then dress it with a saturated solution of bicarbonate of soda (cooking soda) or cover it with olive oil (sweet oil), cream, lard, vaselin, butter, or almost any oil, or with flour or starch.

(2) Burns deep enough to blister. The treatment for a burn of this kind is the same as that given above, except that the blister must be opened. To do this, snip it at one edge with a sharp pair of scissors, or press gently on the blister with a piece of absorbent cotton and catch the escaping fluid in a second piece of cotton, not letting the fluid come in contact with the skin. Do not remove the skin, as it acts as a protection. Be careful not to make the bandage too tight.

(3) Severe burns that injure the deeper tissues. If the burn is deep or the extent of surface burned is considerable, a physician

should be called at once. Remove the clothes and put oil on the burn. Never use a powder on a burn of this class, as it cakes and is hard to remove. Cover with soft muslin and do not put on the bandage too tight. Guard against shock. A burn of this kind is cleansed and washed with a disinfectant solution and dressed with olive oil, vaselin, or carron oil. This last is a mixture of oil and limewater, which is kept prepared at all drug stores. The seriousness of a burn depends mainly upon the extent of surface burned. If one half of the body or more is burned, recovery is nearly impossible.

Treating burns with paraffin. A change in the method of treating burns has been brought about by the great war. Before the war the method of treating them with paraffin, first used in France by Dr. Barthe de Sandfort, had been used by a few physicians in this country, but had not been generally practiced. It has been used in France in hundreds of cases since the beginning of the war, and has given wonderful results, the burn, even when extensive and deep, healing quickly and with little pain to the patient. A burn healed by this method leaves practically no scars or deformity, and skin grafting has been almost entirely abandoned. It has also been useful in treating wounds where a large amount of skin has been removed.

The exact ingredients in the preparations of paraffin used are not generally known, but they are believed to be paraffin 95 per cent, and either beeswax or a vegetable wax and resin. They are sold in small cakes which are easily handled and which melt at a rather low degree of heat.

Several preparations of paraffin are made in this country, and all, perhaps, are equally good. Among them are:

Parresine, made in the Abbott Laboratories, Chicago and New York.

Paraffin No. 7, made at the Germantown Hospital, Philadelphia.

Amberine, also made in Philadelphia.

Preparing the burn for paraffin dressing. No oil, flour, or grease should be applied to a burn upon which paraffin dressing is to be put. It is necessary to have the surface of the wound clean before the dressing is applied, and it is difficult to clean oil or powder from a wound. Keeping the burn under water will relieve pain until the dressing can be put on.

The surface of the burn must be cleaned, and if necessary must be washed with green soap, boric acid, or salt solution. While doing this, care must be taken not to infect the wound, not to injure the raw surface, and not to wipe off any small particles of healthy skin which may have escaped burning. It must then be thoroughly dried. This is most easily done with an electric hair drier. If this is unavailable, the surface may be dried with folds of warm gauze or filter paper and fanned with a clean towel or fan.

Preparing and applying the paraffin. The paraffin must be melted; this is best done in a double boiler. Great care must be taken to keep water from getting into the fluid, as this water will burn when the paraffin is applied. It must be brought to a temperature of from 140° to 150° F., and sprayed over the wound with an atomizer. The atomizer should be heated before the fluid is put into it, and kept at an even temperature. Atomizers for this purpose are made, which are like double boilers with a second receptacle for water. If one of these is not available, an ordinary atomizer may be used. This can be heated by immersing it in hot water, care being taken not to break it; or the paraffin can be painted on with a camel's-hair brush (rubberset). When using a brush, the greatest care must be taken not to injure the surface of the wound or to give pain. The fluid paraffin should be dabbed on, not brushed, and it should not only cover the wound, but extend slightly beyond it on the unburned skin.

Cotton and gauze dressing. After the first layer of paraffin has become hard, it must be covered with a thin layer of absorbent cotton, and over this a second coating of the fluid should be sprayed.

After this coat is set, a gauze dressing is put on, and all is held in place by a gauze bandage.

Re-dressing the burn. Burns dressed with paraffin should be re-dressed at least once in the first twenty-four hours, and later at intervals of two or three days. To remove the dressing, cut through the paraffin outside of the wound, and press or roll the edges back, when the part over the wound is easily removed.

Effects of a paraffin dressing. With this dressing the burn is protected from the air, the new skin is protected against injury, the hardened wax, acting as a splint, keeps the injured part in position and thus prevents deformity, and the heat from the application brings the blood to the surface of the wound and increases the flow of lymph. Pain is relieved as soon as the dressing is applied and the growth of new skin is stimulated. Recovery takes place in a much shorter time when this treatment is used, and more extensive burns are cured by it than by former methods.

Rescuing from fire. If your own clothing or that of any one else catches fire, the quickest way to put the fire out is to roll the endangered person on the floor, wrapped if possible in a rug, blanket, woolen cloth, or overcoat, to smother the flame. The person coming to the rescue should not come too close if wearing a thin gown, but if possible should secure some heavy article to wrap the sufferer in.

In this as in many other cases prevention is easier than cure and much better. Cheap celluloid articles should never be brought near an open flame, as they may explode. Cotton-flannel bath robes or jackets should not be worn near a fire or a gas flame, as a flame started among the fibers on the surface will very quickly run over the gown. Light dresses should not be worn very near an open fireplace where a sudden draft may sweep them into the flames. Inflammable fluids or materials should never be used where there is an open flame of any kind, and preferably not used at all in the evening. If a gasoline stove causes a fire, do not try to put it out with water, as the gasoline will rise to the top of

the water and spread the fire; use flour or smother the flame with a blanket.

Live wires. To rescue any one who is in contact with a live wire, it is necessary to use certain measures for self-protection.

(1) Do not touch the wire with the hand. It may be touched with a dry stick.

(2) Do not touch the person before insulating yourself by covering your hands with a rubber coat. If the ground upon which you are standing and the person's clothing are dry, it is safe to catch hold of him by his clothes; but in doing so grasp only the clothing and do not touch the person himself. Covering the hand with a piece of dry paper is a protection.

The treatment for electric shock consists of loosening the clothes, giving artificial respiration, and as soon as possible giving a stimulant. The treatment for lightning shock is the same as for injury by an electric current.

Freezing. Freezing is a very gradual process. If after feeling intense pain from cold, the part becomes numb and pain is no longer felt, there is reason to suspect freezing. Prompt treatment should be given, rubbing the part briskly with snow or putting it into cold water. Do not come near the fire or into a warm room for some time, certainly not until sensation is fully restored. To prevent damage, the frozen tissues must be thawed out very gradually.

Snake bite. There are few poisonous snakes in this country, and an emergency of this kind is rare. When it does occur, tie a handkerchief or strap above the wound tight enough to stop the circulation. Open the wound by using the point of a knife, cutting lengthwise of the limb, and let it bleed freely. Sucking the wound will draw out the poison, and is not dangerous unless the skin of the mouth is broken. It is not necessary to give whisky, which is of no benefit to the patient. The most effectual treatment in these cases is to use permanganate of potash, which can be packed into the wound after it has been moistened with water.

A solution of this chemical is frequently injected with a hypodermic syringe around the wound and is considered a specific against the poison. Other treatments used are to pack the wound with soda or to burn it out with nitrate of silver. The patient should be taken to a physician as soon as possible.

Treatment of dog bites. The bite of a dog may or may not be dangerous. The wound should be cleansed at once with bi-chlorid of mercury, carbolic acid, or some other effective anti-septic, and ammonia applied. If the dog is sick, or if there is any reason to suspect hydrophobia, a physician should see the patient as soon as possible. Meantime the wound should be kept open and be allowed to bleed freely. To keep the poison from being taken up by the blood into the body, a tight bandage should be applied between the wound and the body, but it should not be kept on longer than forty-five minutes. If a physician cannot be promptly reached, the wound should be cauterized with strong carbolic acid, nitrate of silver, or a hot iron.

The dog should not be killed unless it is absolutely necessary to keep him from biting other people, but should be shut up and watched for symptoms of rabies. If the dog remains alive, there will be no reason to worry. If it develops rabies, the animal must be killed, without injuring the brain, and the head sent to a laboratory for examination. Many unfortunate persons have suffered indefinitely from nervous apprehension of hydrophobia, after having been bitten by a dog not positively proved to be mad, because the dog was killed immediately.

Hydrophobia. The germ of hydrophobia or rabies has not been positively identified, but the disease can be produced by inoculation with a piece of the spinal cord or brain, or with the saliva of a diseased animal. Sometimes the saliva of a dog is infectious before symptoms of the disease appear.

The onset of rabies is gradual, beginning frequently with pain and congestion in the wound, mental depression, irritability, and increase in sensibility in the special senses. This may be followed

by difficulty in swallowing, and then convulsions. There is severe pain in the throat, breathing becomes labored, and there may be foaming at the mouth and partial or complete paralysis.

The prevention of the development of this disease in persons who have been bitten by rabid animals is largely dependent upon the extent of the injury and the promptness with which the Pasteur treatment is given. The incubation period is never less than two weeks and may be as long as a year, and if the Pasteur treatment (in which the patient is repeatedly vaccinated against the germ) is begun in time, the development of the disease can almost always be prevented. It may be added that there have been very fair imitations of hydrophobia due to the nervous terror of the disease and brooding over the symptoms. The best plan is to do everything possible to avert the danger and then believe it past.

Nosebleed. As a rule this is unimportant, but a quantity of blood may be lost, and it is therefore well to check it. Do not allow the patient to lean over the basin, as this will increase the bleeding. Put cold applications over the nose, and little pieces of ice well up inside the nostrils. A compress pushed up inside the nose will stop the bleeding, or two compresses may be used to make pressure on the outside of the nose. Strap them down tight against the sides of the nose with adhesive plaster.

Foreign bodies in the eye. It is best not to close the eye when a foreign body gets into it, for if the foreign particle is a sharp piece of coal or a particle of stone or plaster, closing the lid down may force it into the eyeball. Syringe it out with a medicine dropper, or try to dislodge the object by washing the eye with an eye glass or by pouring a stream of water over the open eye. Turn the lid up or pull it down, and remove the particle with a clean handkerchief or cloth. Do not rub the eye which has the foreign body in it, but rub the other eye.

Foreign bodies in the ear. Sometimes a child will put some small object into the ear. If it is anything that may swell with water, like a bean, do not syringe it. If a moth has entered the

ear, holding a light close to the ear will cause it to crawl out. If the object is hard to dislodge, go to a specialist; for an unskilled person may easily damage the tympanic membrane.

Foreign bodies in the nose. Do not try to dislodge an object from the nose by poking an instrument up into the nostrils, as this only pushes it farther up. Tickle the nose or use a pinch of pepper to cause sneezing. Sometimes the object can be dislodged by pressing with thumb and finger on the outside of the nose, beginning close up to the eyes and pressing and stroking gently toward the end of the nose. If this does not dislodge the object, take the child to a physician. When small children are about, one should never mention the possibility of their putting beans into their noses or ears, as there seems to be a fascination in the idea and they are very likely to try it.

Foreign bodies in the throat. Objects like bits of meat, coins, buttons, or even soft articles like a piece of bread, may lodge in the throat and stop the entrance of air into the trachea. If the patient is a child, take him by the feet, hold him upside down and shake him, or beat him upon the back. A grown person should be thumped on the back, and if this does not bring relief he should be laid face down on a couch with the head hanging down, and beaten on the back to dislodge the intruding object.

Swallowing pins or coins. If a child swallows a pin, coin, or other object, do not give a cathartic. The cathartic, by increasing the muscular activity of the intestines and liquefying their contents, forces the object along and gives it no chance to be covered by the feces. Soft, bulky foods like potatoes or bread may be given. If the child complains of pain, take him to a doctor. Even a sharp-pointed pin will as a rule go through the digestive tract without doing harm.

Stings of insects. Apply ammonia or soda to insect stings, rubbing them well into the wound. Give aromatic spirits of ammonia in the proportion of half a teaspoonful to one third of a glass of water. Salt, wet earth, or cold water may be used to give relief.

CHAPTER TWENTY-NINE

METHODS OF TREATING WOUNDS

A **WOUND** is an injury in which the skin has been broken. Such injuries are classified as *cuts* or *incised wounds*, *torn* or *lacerated wounds*, and *punctured wounds*. There are two serious dangers from wounds: the danger of loss of blood and the danger of infection, of which the latter is by far the more common and more serious. Unless a wound is very severe the bleeding stops of itself before any great amount of harm is done, but infection even of a most insignificant wound may cause a sore or develop into tetanus (lockjaw). The severity of a wound depends on its extent and on the degree of hemorrhage from it.

In using a knife or any other sharp instrument, one should take care to have it clean and not to cut toward the hand. Nails, especially rusty ones, should never be left where they may tear the skin. Bandages and dressings should be kept in a clean drawer by themselves, and if possible in a sealed package or tight box, so that no dust can get at them, and everything likely to be needed for dressing a cut should be in one place and in order. If the knife is clean and the wound promptly bandaged, even a severe cut will usually heal easily.

Small cuts. A small cut should be allowed to bleed for a few minutes, as this helps to carry off dirt and bacteria. Then sponge out the wound with a weak disinfectant, a dilute solution of carbolic acid, listerin, or alcohol. Alcohol stings for the moment, but a wound dressed with it heals quickly. Wrap the injured part with a clean piece of gauze or old linen wet with the disinfectant. Iodin is a good disinfectant and can be painted right over the wound. Peroxid of hydrogen is little used now, for although it cleans the wound it injures the tissues and delays the healing process. Unless the opening is large enough to allow it to bubble out freely, it will force the dirt into the tissue. If the bleeding is too free, apply the bandage tightly, but when it has stopped, loosen the bandage, as it is better not to cut off the blood supply.

When far from a doctor, use adhesive plaster to close a long cut. Put several long, narrow strips over sterilized gauze, but never bring it in direct contact with the wound, for it is not free from germs and may result in infection. Collodion and "new skin" are prepared with ether, which is a disinfectant, and can be applied directly to a wound.

Punctured wounds. A punctured wound is one made by a sharp-pointed instrument or a bullet. There is always danger of infection in such wounds, as the outlet is small and the wound is hard to clean and drain. There is no other serious danger unless the weapon or bullet pierces a blood vessel or organ.

If the puncture has been made by a stable fork or a nail, one should watch carefully for fever or symptoms of infection, as there is always danger from the tetanus germ. A surgeon should be called at once to cleanse the wound and if necessary administer anti-tetanus serum (antitoxin). This is almost a sure preventive of the disease if used promptly when the injury is sustained.

Lockjaw or tetanus is caused by a germ which is most often found in soil, especially in manure. It develops most readily in a deep punctured wound, and is always carried into the blood through a wound of some kind. Wounds made by dirty, rusty nails or stable and garden tools are especially likely to contain this germ. A large percentage of cases among children are caused by wounds from toy pistols, fireworks, and firecrackers. It is thought that this is due to the fact that a wound from this cause is deep, and that dirt is carried in from the skin of the hands. The period of incubation is usually from six to fourteen days, but may vary from four days to three weeks.

In mild cases there is little fever, but in severe cases the temperature may go to from 103° and 105° to 110° . The muscles of the head and neck are the first to be affected, gradually becoming rigid. The rigidity then spreads over the body, frequently accompanied by spasmodic contractions of the muscles and convulsions

in which the body is arched backward, until in severe cases the patient may rest upon his head and heels. These convulsions are brought on and intensified by a noise, a touch, or an excessive glare of light. The patient may die of suffocation because of the rigidity of the respiratory muscles.

If symptoms of the disease are observed, a physician should be called at once and tetanus antitoxin injected. The wound should be opened well, allowed to bleed, and thoroughly cleansed and drained. The patient should be kept quiet and in a dark room. Bromids and other quieting medicines are given, and to check the convulsions chloroform is sometimes used. Feeding is done through the nose or by enema.

Lacerated wounds. In a lacerated wound the tissues are torn by a blow from a blunt instrument or in some other way. The chief danger from such a wound is that of infection. The wound should be carefully cleansed, and the methods already described used to prevent infection.

Hemorrhage from wounds. Hemorrhage does not depend on the size of the cut, but on the number and size of blood vessels that have been injured. One of the worst cases of collapse from hemorrhage that I ever saw was that of a man who had a cut in his scalp less than an inch long. An artery had been cut, and he had been brought from a long distance to the hospital, without any attempt having been made to check the bleeding. There are three kinds of hemorrhage, and it is most important to be able to recognize each kind. They are:

(1) Arterial hemorrhage, in which the blood comes from a cut artery. It may be recognized by the blood coming in jets or spurts. This is the most dangerous, because, owing to the force of the heart pumping it out, the blood escapes rapidly.

(2) Venous hemorrhage, in which the blood comes from a vein and flows in a slow but steady stream.

(3) Capillary hemorrhage, which is the oozing of blood from the wound.

How to stop a hemorrhage. As soon as bleeding begins, Nature uses her own method of checking the flow, by forming a clot of blood at the end of the cut blood vessel. If the bleeding is not too strong, this is done. Our first effort, therefore, must be to aid Nature by keeping the patient quiet and cutting off the flow of blood, so that the clot shall not be dislodged. The pressure must of course be upon the walls of the blood vessel on the side of the wound from which the flow is coming. In arterial hemorrhage the blood is coming from the heart, so that pressure must be between the cut and the heart. In venous hemorrhage the blood comes from the extremities and is returning to the heart; therefore the pressure must be on the side of the cut away from the heart. The veins have valves at intervals to prevent the flow of blood in the wrong direction. The vein will, therefore, when pressure is applied, become empty up to the nearest valve. In case of a large vein it is well to put compresses on the two sides of the cut, or one large compress immediately over the cut. If the bleeding is from capillaries, a firm dressing or bandage is all that is necessary. Cold water tends to check the flow of blood; warm water does not.

As soon as hemorrhage has been stopped, dress a severe wound as you would a small one, with sterile or disinfected gauze, and get a doctor as soon as possible to put in the stitches that may be needed.

Internal hemorrhage. If there is reason to suspect that an internal hemorrhage is taking place in one of the cavities of the body, keep the patient absolutely quiet, as restless movements may dislodge the clot that may be forming in the end of the broken blood vessel. Send for the doctor at once. In case of abdominal bleeding, put an ice bag on the abdomen, raise the foot of the bed, and take away the pillow. The temperature will drop below normal, and one must guard against shock.

Compresses. A compress is a folded piece of cloth used to create pressure. It is usually made of gauze, but in an emergency can be made with a handkerchief or several handkerchiefs or any

other soft material which can be folded. A cork or chip wrapped in a piece of muslin will answer.

The compress is put over the artery or veins and bandaged firmly in place. The bandage can be tightened by slipping a pencil inside it and twisting until the compress is pressed against the artery hard enough to stop the bleeding. The blood flow could be stopped as effectually by pressure with the thumb, but such pressure could not be kept up for an indefinite time, because the hand would become so fatigued as gradually to loosen its hold.

Tourniquets. A tourniquet is a strap used to wrap around a limb to stop bleeding. In hospitals tourniquets made of leather or of elastic are used, but in an emergency any strong strap of any material, a bandage, a handkerchief, anything that can be tied around the part, will do. A tourniquet should be made very tight, which can be done by twisting it close with a stick or pencil. It should not be left on for more than fifteen minutes, as it cuts off the blood supply from the extremity, and may cause an unhealthy condition of the part, or even in some cases gangrene. The part of the body below a tight bandage or tourniquet should be kept under observation, and if it becomes cold, swelled, or discolored, the bandage should be loosened and the blood allowed to flow into the extremity. If, with the removal of the bandage, the hemorrhage begins again, press on the artery with the finger until the blood has had a chance to flow into the limb, and then replace the tourniquet. A wound that bleeds so freely as to require a tourniquet should be treated by a surgeon as soon as possible.

The Carrel-Dakin method of treating infected wounds. During the first months of the great war it was found that the infection of wounds was a great problem and that a large percentage of the deaths and deformities among wounded soldiers was due, not to the wounds themselves, but to the bacteria infecting them. During the summer and autumn of 1914 it seemed impossible to control infection, despite every effort made both in the first dressing and in the after treatment at hospitals. Shells and bullets

damaged the tissues horribly, carrying dirt and bacteria into the wound, and if there was any delay in getting the wounded man to the hospital the wound would be in a dreadful condition before thorough treatment was possible.

In 1915 Dr. A. Carrel of the Rockefeller Institute and Dr. H. D. Dakin of the Herter Laboratories, both of New York City, working at the laboratories established by the Rockefeller Foundation at Compiègne and at Temporary Hospital No. 21, Service du Santé Militaire, developed antiseptics and methods of their application which have been successful in the treatment of infected wounds. The treatment prevents or stops suppuration, and allows closure of the wound. The method embraces four essential parts: (1) mechanical cleansing, (2) chemical sterilization, (3) bacteriological control, (4) closure of the wound. The antiseptic used is a sodium hypochlorite solution, Dakin's solution, which contains between 0.5 and 0.4 per cent sodium hypochlorite and which is not alkaline to powdered phenolphthalein. The technic of applying the antiseptic involves special apparatus consisting of a graduated glass reservoir connecting through rubber and glass connecting tubes to small rubber distributing tubes. These tubes, which are perforated with small holes, are so placed that the antiseptic solution is brought in contact with every part of the wound. Gauze compresses are placed over and about the tubes, and the whole is covered by a pad of cotton and gauze. The surrounding skin is protected from the irritant action of the solution by vaselin compresses or by zinc oxid ointment. The wound is dressed once a day, and the antiseptic solution is instilled into the wound every two hours, day and night.

Effects of the treatment. This method of treating wounds has been found both inexpensive and practical. Microscopic examination of the wound shows an almost marvelous disappearance of bacteria. When it is found that all bacteria have disappeared from the tissue, the wound can be sewed up, and it will heal with good muscle and practically no scar.

The results from the treatment under war conditions have been wonderful. Wounds are quickly cleansed of infection and heal in from one half to one third less time than formerly. The danger of secondary hemorrhage has been lessened, and the patient recovers quickly and in much better condition. The number of amputations has been decreased, and when amputation has been inevitable the stump is clean and healthy and an artificial limb can be used much sooner than formerly. Because of the quick recovery of the patients their stay in the hospital is shortened, and their beds are quickly given up to others, so that many more can be treated with the same equipment. So exact is the technic of this work as done under Dr. Carrel, and so certain the results, that a system of calculation has been worked out by which in most cases, knowing the extent of the wound and the age and condition of the patient, it can be estimated to a day when he will be convalescent.

CHAPTER THIRTY

DISLOCATIONS, FRACTURES, AND BANDAGES



FIG. 70. The triangular bandage on the head.

A **DISLOCATION** is the slipping of a bone from its socket, often accompanied by the breaking and tearing of the ligaments which hold it in place; a **fracture** is the breaking of a bone. In either case the sooner the patient is in the hands of the surgeon the better. Delay may not only increase the suffering of the patient but interfere with recovery, or even result in permanent injury.

Dislocations. A dislocation can be recognized by the appearance of the joint. If there is any doubt about its proper appearance, compare it with the joint on the

other side. Sometimes the head of the humerus (arm bone) can be felt to be out of the socket. Pain in the joint and loss of freedom of movement are indications of dislocation. In some persons a dislocation occurs very easily and should be guarded against.

There is likely to be contusion and swelling around the joint, and if the swelling becomes too great before the bone can be put into its place it is difficult to handle it. Place your patient in as comfortable a position as possible, not moving the limb more than is absolutely necessary, and then, to prevent swelling, apply cold or hot and cold compresses. Usually only a physician should attempt to put a dislocated bone back into place.



FIG. 71. Laying the hand in a triangular bandage.

Fractures. A fracture may be *simple*, *compound*, *comminuted*, *impacted*, or *greenstick*.

A simple fracture is one in which the bone is broken, but in which there is no opening through the skin.

A compound fracture is one in which the skin is pierced by the end of the broken bone.

A comminuted fracture is one in which the bone is broken into many pieces.

An impacted fracture is one in which the two ends of the bones have been forcibly driven together.

A greenstick fracture is an incomplete fracture, and is common in children, whose bones, not being brittle, do not in many cases break completely.

Treatment of simple fractures. A simple fracture, if not handled carefully, can easily become a compound one. If it is not possible to reach a physician promptly, it is best to move the patient as little as possible. Leave him where he is and make him as comfortable as you can. If it is necessary to move the limb, support it well at the sides of the fracture. If the patient has to be moved, a temporary splint should be put under the limb. The splint is a support, and can be made of whatever is at hand, — a pillow tied firmly around the leg with strips of muslin, a bag stuffed with hay, a piece of heavy pasteboard, a piece of stick on each side of



FIG. 72. The bandage folded about the hand.

the broken limb, or coats rolled into a tight wad. In putting on the bandage, be careful not to make it tight enough to stop the circulation.

Treatment of compound fractures. A compound fracture is treated like a simple one, with the additional point that the open wound must be taken care of. If there is profuse bleeding, it must be checked and care taken not to infect the wound. Dress it with clean gauze as you would any other open wound, and watch the patient for symptoms of shock.

Sprains. A sprain is caused by severe wrenching of the ligaments around a joint, most commonly in the wrist or ankle. The treatment should be given as promptly as possible. If the injury is in the ankle, remove the shoe, apply hot or cold water, or hot and cold water alternately, — as hot and as cold as can be endured, — putting the foot into first one and then the other for fifteen to twenty minutes. Then elevate the foot to lessen the swelling. If the sprain is slight, the foot should be allowed to rest for several hours, and then used moderately to prevent stiffness. If the injury is severe, a surgeon should be called. There is a growing disposition to strap the foot and leg with adhesive



FIG. 73. Placing the foot in a triangular bandage.

plaster and allow the foot to be used. Massage is beneficial, but should be given in the proper manner, not too heavily at first. There should be passive exercises as soon as they can be borne.

Strains. A strain is caused by overstretching a muscle, sometimes slowly in lifting a heavy weight, sometimes quickly from a sudden jerk. It is not as serious an injury ordinarily as a sprain. The treatment is about the same as for a bruise or sprain, — rest, hot or cold applications, and rubbing.

Bruises. The discoloration in a bruise is from the breaking down of a number of little blood vessels in the tissue under the skin, by injury through a blow or fall. The discoloration may be caused by a blow so slight that we are not conscious of it; usually such a bruise needs no treatment. If it is on the face, where it will be unsightly, it can be treated by applications of alcohol, vinegar, witch hazel, ice water, or cold water, any of which will cause the blood vessels to contract and check the escape of blood into the tissues.

If the blow has been a severe one, use these same remedies to ease pain and allay inflammation, and keep the injured part raised to lessen the blood supply. When the acute inflammation subsides, massage will help to take out the soreness and quicken the



FIG. 74. The bandage folded about the foot.

absorption of the blood in the bruised part. If the injury is followed by shock, there may be more serious complications, and a physician should be called. In the case of a severe bruise, it is well to have a thorough examination made, to be sure that there is not a fracture.

Bandages. Bandages are used to keep dressings and splints in place; to make pressure to stop bleeding; to give support; and to protect injured parts against knocks or blows. The two most commonly used are the triangular and the roller bandage.

The triangular bandage. The triangular bandage can be conveniently used when it is necessary to hold dressings in place. As a rule it is made of stout unbleached muslin, but any strong material will do; muslin from sheets or clothing, or a large handkerchief, may be used. The bandage can be folded into a wide or a narrow strip, or can be used in the triangular form. The usual size for a triangular bandage is the triangular half of a yard of material, but sometimes, in an emergency, a piece as large as this cannot be obtained. There are certain rules for applying this bandage, but one must plan somewhat according to the size and the part to which it is to be applied. The following instructions will help in fitting the triangular bandages on some of the parts of the body on which it is commonly used:

Bandaging the head. When the bandage is large, place it over the head with the middle of the folded edge well forward on the forehead and the point hanging down the back. Bring back the two ends, which hang down the side of the head, and cross them well

down at the back ; then bring them around to the front and tie them on the forehead. Turn up the point in the back and fasten it with a pin. The ends of the bandage are tied in front, so that there will be no knot under the head when the patient is lying down.

When the bandage is small, put the point in front and the middle of the bandage at the back ; tie the ends in front and turn the point which is hanging over the face up over the knot and pin it with a safety pin.

Bandaging the hand and foot. Lay the hand on the bandage, with the palm down and fingers toward the point ; fold the point up over the back of the hand ; wrap the two ends around the wrist and tie them.

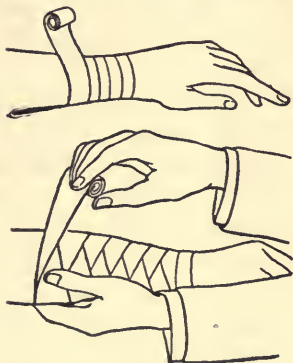


FIG. 76. A roller bandage on the wrist, and the method of reversing a bandage.



FIG. 75. The triangular bandage used as an arm sling.

Bandage the foot like the hand, after placing it on the bandage with the toes toward the point.

The arm sling. Let the point of the triangle come out beyond the elbow. The end running under the arm goes across the chest to the side of the neck away from the injured arm ; the other end goes around the neck on the side of the injured arm ; and the two ends are then tied around the neck. Lastly, the point is brought up around the elbow and pinned.

Triangular bandage folded. When the triangular bandage is folded with the point in, it can be used for eye, jaw, hand, or wherever a narrow bandage is needed.

The roller bandage. The roller bandage is made of gauze, flannel, muslin, crinoline, or rubber, according to the purpose for which it is designed. In an emergency any material that is pliable and strong can be used. The bandage is torn into

different widths according to the part of the body to which it is to be applied. The usual widths are: for a finger, three fourths of an inch; for arm and head, two and one half inches; for leg and thigh, three inches; for chest and abdomen, four to five inches.

A roller bandage is much harder to apply neatly than a triangular one, but a little practice will make one skillful in its use. Certain points must be observed. Apply the bandage firmly and evenly, but be careful not to have it too tight. After an injury, put on a loose bandage to allow for possible swelling.

The circular method of applying a roller bandage is the easiest, and when used to hold a splint in place is the one generally employed. Gauze and flannel bandages can be used best in this way, as they are pliable and soft. A circular bandage will not be even in pressure if the surface to be covered is larger in one part than in another, and to make the bandage lie flat and even we use "reverses" and "figure eights."

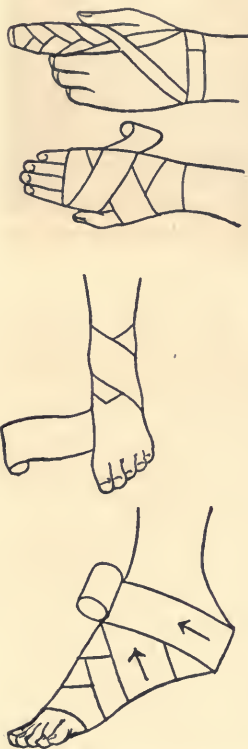


FIG. 77. A roller bandage on the hand and foot.



FIG. 78. A roller bandage about the knee.



FIG. 79. A roller bandage on the foot.

The reverse is made in this way: With the roll in the right hand, press the thumb of the left on the lower edge of the bandage and hold it in place; loosen the pull of the right hand on the bandage and make a quick turn of the roller toward you, making a fold before taking it again under the limb. When several reverses are made, they should form a line up the limb.

The figure eight bandage is used to cover joints. To apply it, fix the end of the bandage by several circular turns below the joint; carry the bandage up and make the circular turns immediately over the joint; next make a turn a little below the joint, overlapping well the bandage covering the joint; then a turn under and next above the joint, overlapping above as was done with the one below. Continue in this way, going first below and then above, until well above and below the joint. When the point of the joint does not need to be covered, omit the two turns immediately over the joint.

CHAPTER THIRTY-ONE

THE TRAINED NURSE

BELIEVING that better understanding of the training and duties of a nurse, by those who employ her, would not only make her work easier, but more effective, I introduced in one of my lectures a brief talk about the trained nurse and her work. The class was eager for a wider knowledge of the subject than could be given in the time, and many questions were asked by this and other groups of students, concerning the training of a nurse, why it is so severe, what was required of the applicant, what type of hospital was best, and what positions nurses were filling. Questions were also asked as to the ways of helping the nurse in her work, making her life happier, conserving her strength, and aiding in her efforts for the benefit of the patient.

In this chapter I am trying to answer these questions and also to give information likely to be of interest to those who wish to become nurses, as well as to those who employ a trained nurse in their homes. A nurse's life is not an easy one, and many nurses are broken down in health and obliged to give up their work earlier than are women of other professions. In many cases this could be avoided if those in whose homes they worked took care not to subject them to unnecessary privation and fatigue. There is no advantage either to nurse or patient in the nurse's wasting needlessly the strength she requires for her real work. Few professions are more interesting and more developing than that of the trained nurse, hard and exacting as the training is. There is a fascination and a broadening influence in the training that might well be valuable to any woman.

Requirements for applicants. Certain requirements are common to most if not all hospitals. The applicant must be healthy, must have passed through the high school, must give at least two letters certifying to her moral standing, and must in most hospitals be at least twenty-two years old. Some hospitals are less exacting in their requirements than others, and admit women even as young

as eighteen years of age. Any one in search of thorough training will do well not to choose such a hospital. Eighteen is too young to begin the training; a girl of eighteen has not the experience mentally or physically to meet some of the difficulties she may encounter, and in many cases she begins the training impulsively, without any real understanding of her undertaking. As a rule the hospital which will take a girl of eighteen is a small hospital for children. There is possibly no objection to taking the training there if one is seeking simply experience in nursing children; but it is much better to take a good all-round training in a general hospital, and then, if it seems desirable to specialize in any one branch of the work, to take whatever special training is necessary with the aid of the solid foundation of general experience. A nurse cannot be trained by correspondence. That is impossible. She must come into personal contact with the patient, learning to take temperature and give other treatment in order to be able to understand her work.

Large and small schools. In most ways the schools in the larger cities are the better, because they have the means to give the best training, and the number of patients is large enough to afford good experience. In some small hospitals, however, there are certain advantages. A nurse in a small hospital can see and study each case, while in a large hospital her duties are hard, and she is frequently not permitted to go from one ward to another. Thus she misses some things in her training which are gained by the nurse in the small school.

The registered nurse. Many states have passed laws permitting registration to hospitals and nurses. A hospital, to be registered, must not have below a certain number of patients, and the instruction given to the nurses training in the school must be up to a certain standard.

A nurse, to register, must prove that she is a graduate of a registered school, that she is of good moral character, and that her work both in the school and since leaving it are up to the standard.

She must pass an examination in anatomy and physiology, materia medica, and other subjects considered necessary by an examining board appointed by the state. She is then entitled to write after her name the letters "R. N." (Registered Nurse). This registration of nurses was started in an effort to raise the standard of training for nurses and as a means of helping those employing them to obtain nurses of good training and good character.

Health of nurses in hospitals. In most hospitals attention is given particularly to the health of the nurse, and in many cases young women who enter a hospital in a somewhat run-down or nervous condition leave in much better health. It is well to investigate the feeding of the nurses before deciding upon a school. In some schools the food is very poor, and a demand for good food by applicants choosing schools would greatly help in improving these conditions.

Severity of training. The training of the nurse is exceedingly hard, possibly sometimes unnecessarily so; but when the life of the graduate nurse is considered, — the long hours, the severe mental and physical strain, and the responsibility of her work, — it is evident that vigorous training in the hospital is absolutely necessary as a preparation. During certain periods of her hospital work, the nurse is often on duty for eighteen hours out of the twenty-four; but only in this way can it be certain that she will be able to undertake any and every kind of work which is a part of a trained nurse's life.

Positions open to nurses. Formerly the only future for a nurse after graduation was to continue in the hospital, taking charge of a ward or of the hospital itself, or to go into private nursing. Year by year, however, there are more and more places where a nurse is needed. If statistics were to be taken, it might be found that trained nurses are in all kinds of positions. They are secretaries, companions, lecturers or residents in schools and colleges, nurses by the hour in the homes of rich or poor, and housekeepers in schools and hospitals. Other things being equal, in many

forms of school work the trained nurse will be preferred to an equally able woman without this training, in any position of responsibility.

Duties of the nurse to the patient. The nurse goes into a house to take care of the patient. Whatever is necessary for the patient's health and comfort is a part of her task. In the case of a delirious patient, or one who is easily excited by the presence of others, the nurse should take care of the sick room. If the presence of a third person is exciting to the patient, and the sweeping of the room by the nurse will lessen this nervousness, this work should be done by her. If, as often happens, food is as much a part of the treatment as medicine, and no one in the house can prepare it properly, the nurse should assume this duty. I have known of good nurses, anxious to do what was right by the patient, who went out to the market and bought the food, and cooked it and served it to the patient. A nurse should not say, "This is not my work; that is not my work; if it is not well done it is no affair of mine." Occasionally a nurse will say, "My work is only in the bedroom. I do not go out of the room." I have known nurses to carry this to the extreme of requiring a maid to carry vessels from the bedroom to the bathroom to empty them. The nurse's work is to do what is necessary for the patient, give her treatments, keep her records; and if the inefficiency or negligence of others obliges her to supplement her own work by doing some of theirs in order to insure the recovery of the patient, she should not maintain her own rules at the expense of her charge.

One winter I took charge of a woman who had been insane for about two weeks and in charge of a nurse. The physician gave me directions to allow no member of the household to come into the room, as this had from the first excited the patient to the point of frenzy. Two or three days after I went there, the laundress asked if I would give her a bag of laundry hanging in the closet in the patient's room. As I handed her the bag she said, "Thank Heaven, at last the children will be able to have a change of cloth-

ing." Then she explained that the bag of laundry had been in that closet ever since the illness of the patient began. When the nurse in charge had been asked to give it to the laundress, she had refused, saying that she had come to the house to nurse a patient, not to collect the family wash!

Needless to say, the nurse owes to the family a sympathy and understanding which should make any such occurrence as this unimaginable. When it is right and suitable for her to answer a question she should do so, remembering at the same time that she is not there to diagnose or prognosticate the case. She should be careful in expressing an opinion, and should never criticize the physician, but should carry out his orders with all possible accuracy. She should remember that the business of the family is not her business, and whatever she may see and hear in the course of her duties is never to be spoken of in other houses.

Duties of the patient to the nurse. The nurse is in the room to do what is necessary for the patient, and in a person who is ill, much is to be overlooked and excused. Nevertheless, there are patients who take advantage of this and call upon the nurse unnecessarily, particularly at night. Moreover, the nurse is only human, and no matter how much she may wish to do so she may not always do things at first as the patient is accustomed to having them done. A little patience on the part of the patient will enable the nurse to learn more quickly and make her work more satisfactory. It must be recognized also that upon the patient lies a part of the responsibility of recovery, and that if the nurse's advice is not followed, and fretting and impatience interfere with the well-being of the invalid, neither nurse nor physician can do the work as well as it would have been done with the coöperation of the patient.

Duties of the family to the nurse. If no nurse experienced the lack of consideration found in certain families, fewer families would have to complain that the nurse will not go outside her own specified duties. If nurses were always careful not to lay unnecessary

burdens upon the servants, fewer employers would let the nurse wait upon herself rather than see that she was cared for by the maids. The unfortunate feature of the situation is that the consequences of selfishness and injustice do not usually fall upon those who commit the offense, but upon those who really want to be fair and kindly. The nurse who might not object to doing more than her duty may be forced in self-defense to make a rule and keep to it, in order not to be overworked.

The family should not require needless work of the nurse. Unless there is some reason for the nurse's sweeping the floor and dusting the room, the work should be done by the person who usually performs it. If the cook is competent to prepare the food, the nurse should not be obliged to leave her patient and go into the kitchen. If possible, the sick room should communicate with the bath, or at any rate be on the same floor; for when the sick room is on one floor and the bathroom on another, it entails great additional fatigue in caring for the patient. One nurse whom I know was in bed for months, with a strained back, because, having three patients instead of the two she had expected, she had also to carry all bath water from the second floor to the third and down again. She gave out early in the case, and her financial loss from months of enforced idleness was serious. If some one had been detailed to attend to this piece of manual labor, it would certainly have been far better economy than to consume in it the strength of a trained specialist, which was needed for the care of her charges.

Often, by a little thought, extra care and work for the nurse can be avoided. She cannot rearrange the furniture of other people's houses, but if a patient on the second or third floor is on a liquid diet, an ice box can be provided there in which to keep the milk. Means may be supplied for her to heat water, make tea or cocoa, and do other work, on the same floor as the sick room, instead of in the kitchen, where it will interfere with the routine of the household. Things which the nurse knows will be needed can be kept on hand.

Miscellaneous extra duties required. A nurse engaged for one patient is not a resident physician, and should not be constantly called upon to treat other members of the family on her own responsibility. In some households it seems to be taken for granted that the duties of the nurse include general oversight of the family. Medicines are handed over to the nurse to give to the children, though the mother or governess may have been administering them for months. She is asked to wash out eyes, give enemas, advise about diet, even to prescribe for ailments and answer questions which should be asked of the doctor. If her patient is not seriously ill, she is usually glad to be helpful; but many a nurse, after working hard with a patient, has been required to spend the few minutes which she might have used for rest, in some attention to another member of the family. There are many women who seem to feel that any one who is "in the house and not busy just now," even if engaged for certain duties which are well done, ought to be kept occupied. It is well to remember that business is business, and that if you engage a person for certain duties you have no right to require anything more of her.

Recreation and rest. The nurse is entitled to her hours off for recreation. When the patient is extremely ill she often gives up this time, remains within call, never goes out, and works with all her mind and heart and body to save the life and health of her helpless charge. At the end of that time, when convalescence has begun, she not only may but should take her due time for recreation, and it is only fair for the employer to give it to her freely and ungrudgingly.

The kindness and appreciation of the mother of one of my early patients is always a bright memory. The boy was ill with typhoid fever, and as there had been two deaths from this disease in the immediate family, anxiety about the case was natural. He had a rather mild attack, but to relieve the strain upon the mother I stayed in very closely, not taking my daily walk, and remained within call until he was out of danger. I then found that the

mother wished me to go out for the whole afternoon every day. I reminded her that she was giving me more than was my due, and she said that I had given her many long hours to which I was entitled. I suggested to her that a nurse's hours of rest were not usually cumulative, and that as she was doing what few would think of, she might spoil me.

"I hope," she said, "that you will find you are mistaken about that. If you do not, I shall like to think that you will look back upon this case with pleasure, and remember our great appreciation and gratitude to you for the care and thought which you have given us."

More generous giving might exist in this world if it met with more generous receiving, but the attitude of a great many people is expressed in the old proverb, "The more you do, the more you may do," and this inevitably tends to cool the ardor of those who would like to give themselves freely.

The nurse's bed. When a nurse spends weeks of hard work, perhaps, helping to bring a well-loved member of the family back from death, she sometimes has nothing in the way of a bed but a cot or an uncomfortable makeshift couch. The family argues that it is only a temporary arrangement, and there is no need of going to the expense of buying a bed. One thing which breaks down the health of nurses is the uncomfortable way in which they have to sleep. A member of the family may for a week or two, during some one's serious illness, sleep on a couch, or on a mattress on the floor, but at the end of that time he goes back to a comfortable room; the nurse goes from one patient to another and one temporary sleeping berth to another, year in and year out. I knew of one case in which the nurse slept for seven weeks on a couch so short that she had to put her feet on a chair at the foot of the couch and so narrow that when she wanted to turn over she had to stand up, turn around, and lie down again. Cases of this kind occur, not in the houses of the poor, but in the ordinary emergencies of well-to-do people. The nurse has no remedy

but to give up the case, and that for obvious reasons she cannot often do.

The nurse's meals. It is very hard for a woman to sit up all night, working hard, possibly having a very poor lunch, and when morning comes and she is thoroughly exhausted, to see the members of the family, after a good night's rest, go down to breakfast and then, possibly at nine or half-past nine or ten o'clock, remember that the nurse should have hers. An early cup of coffee or an early breakfast does much to keep her from becoming fatigued. Personal oversight should be given to the midnight tray for the nurse. Many maids are careless in its preparation, sometimes forgetting it entirely. There is no exhaustion greater than that of a tired nurse between two and five o'clock in the morning; and it does not help her when she goes to her room, hoping to brace herself with food against those early morning hours, to find a tray carelessly prepared, lacking salt, pepper, or sugar, with thick slices of bread and weak coffee, and showing in every way that no one has given thought to her and her comfort.

Contrast with such neglect one of my cases, that of a man critically ill of pneumonia, who was given an open-air treatment in midwinter — always hard on the nurse. At one o'clock each morning his daughter would call me to my supper, prepared with her own hands — hot soup or oysters, hot coffee or chocolate, on a dainty tray, served in the most tempting fashion.

"I could never be happy," she said, "if I knew that any one was working as hard as you do for a member of my household and I was not doing everything that I could to make her comfortable."

She was one woman in a thousand, and nurses do not expect such thought as that; but they have a right to expect a little care from people for whom they are doing so much. Nurses excuse this thoughtlessness by saying, "People are worried and don't think," and this no doubt is true in many cases.

Excessive fatigue in the nurse naturally reacts against her work in her care of the patient. See that she has her hours of rest and,

where it is necessary, bring in a nurse to relieve her. One of the wonders of the world is the few mistakes that are made by nurses who have worked to such a point of exhaustion that they should not be held mentally or physically responsible for their acts. If a nurse asks to have some one relieve her and stay in the room when she is out attending to other things, be ready to give her this help; for often the nurse who is with a case constantly recognizes slight delirium long before the doctor can see it. A delirious patient is always anxious to get out of bed. Many times, when she appears to be all right, she is slightly delirious; and many accidents can be avoided by the willingness of the family to relieve the nurse when she asks them to do so.

Visits from the family. The visits of the family to the patient should be subject to the orders of the physician and the judgment of the nurse. When a patient is very weak, constant visits from the family and friends are fatiguing. Sometimes a certain member of the family will irritate and excite the patient. When delirious, people are often most excited or even irritated by the presence of those whom they love best. When a physician orders a member of the family kept out of the room, the family should understand that it is done absolutely for the good of the patient, and respect the order.

When permitted to go into the sick room, a visitor should stay only as long as the doctor has given him leave to stay. If the patient is fatigued before the time is up, and the nurse asks the visitor to leave, no irritation should be felt in acceding to this request. Many patients have had relapses because of fatigue from seeing their friends too long. If, when the doctor has given permission to one or two persons to see the patient, those who come first are allowed to go in, the later comers should feel no pique or sensitive unhappiness at not being allowed to follow. The nurse is simply carrying out the doctor's orders, and it is of no personal importance to her who is allowed to come into the sick room, except in as far as it affects the patient.



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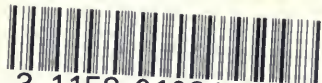
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